

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Published every Saturday by the
Simmons-Boardman Publishing
Corporation, 1309 Noble Street,
Philadelphia, Pa., with editorial
and executive offices: 30 Church
Street, New York, N. Y., and 105
West Adams Street, Chicago, Ill.

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The Railway Age is a member of
the Associated Business Papers (A.
B. P.) and of the Audit Bureau of
Circulations (A. B. C.).

Subscriptions, including 52 regular
weekly issues, and special daily edi-
tions published from time to time
in New York, or in places other
than New York, payable in advance
and postage free. United States,
U. S. possessions and Canada: 1
year, \$6.00; 2 years, \$10.00; foreign
countries, not including daily edi-
tions: 1 year, \$8.00; 2 years, \$14.00.

Single copies, 25 cents each.

H. E. McCandless, Circulation
Manager, 30 Church St., New York,
N. Y.

Vol. 107

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SIGNALS, TOO, make Streamliners Pay!

THE green lines on this map indicate the routes of light-weight, streamlined passenger train service, the high-speed schedules of which are being maintained with the help of "Union" modern signal systems.

Modern railroading utilizes every operating second. Every minute saved is reflected in reduced operating costs, while every minute of

interference with train operations is quickly multiplied into unnecessary expense. "Union" modern signaling systems are safely helping eliminate waste seconds and minutes in train operation, thus effecting substantial economies.

"Union" engineers will be glad to discuss with you any signaling problem, without obligation.

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Five and a Half Years of the Streamliners

The first two lightweight, streamlined passenger trains in the world were delivered in the spring of 1934 to American railways, and were described in the *Railway Age's* issues of February 3 and April 14 of that year. Only five and one-half years afterward the *Railway Age* devotes its present issue to more than 60 such trains operating in every section of the U. S.

The appearance of the first two streamlined trains coincided with a sharp change in the trend of railway passenger business. It reached its maximum in 1920. From 1900 to 1920 the number of passengers carried increased from 577 million annually to 1,235 million, or 114 per cent; the number carried one mile from 16 to 49 billion, or 206 per cent; and earnings from passenger business from 324 million to 1,289 million dollars, or 300 per cent.

The Decline of Passenger Business, 1920-1933

Like every other kind of business, railway passenger traffic declined during the depression in 1921-1922. It partly recovered in 1923; and then there was a decline that never stopped until the end of 1933 and that wiped out all the gain since 1900.

It was impossible to reduce passenger service and the cost of rendering it anywhere near in proportion to the decline of traffic even between 1920 and 1929—and much more impossible during the next four years. Consequently, the net results of passenger operation rapidly became more unsatisfactory. The average number of passengers carried per train by all Class I railways in 1920 was 82½, and average earnings per train-mile were \$2.88. In 1929 the average number of passengers per train was 55 and average earnings per train-mile were \$2.18. In 1933 average passengers per train was less than 43, and average earnings per train-mile only \$1.28.

The Revival—1934-1937, Inclusive

The principal cause of this terrific decline of railway passenger business was the new competition of the private automobile and the bus. It declined more than one-third between 1920 and 1929 although the last seven years of this period were years of flourishing general business and increasing national income. The

obvious explanation was that between 1920 and 1929 the number of passenger-carrying motor vehicles—private automobiles, buses and taxis—was *trebled*, increasing to over 23 million. Then came the depression and reductions of fares, and in 1933 railway passenger earnings were only 40 per cent as large as in 1929 and only 25 per cent as large as in 1920.

As already indicated the turn then came; and throughout the four consecutive years 1934-1937 there were gains in both traffic and earnings in spite of increases in both highway and air competition. The number of passengers carried one mile was 50 per cent larger in 1937 than in 1933, although, because of reductions of fares, passenger earnings increased only 35 per cent. The traffic handled was the largest since 1930; the earnings the largest since 1931. Average number of passengers *per train* was over 59—the largest since 1926 and an increase of 25 per cent over the bottom reached in 1933; and average earnings per train were \$1.50—the largest since 1931 and an increase of more than 17 per cent over 1933.

Most important of all—the long decline had been stopped. Traffic declined again in 1938 and the first four months of 1939; but since April it has been increasing once more, showing definitely that its general trend, unlike its trend from 1920-1929, is now once more determined by the *trend of general business*, and that, as was always true prior to 1920, it can be expected to gain when general business gains.

The Streamliners a Decisive Factor

How much have the lightweight, streamlined trains contributed toward changing the trend? A great deal. The change has been due to several causes—and the character of the trains themselves is also due to some of these causes. But that the trains have been an influence of the utmost importance there can be no possible gainsaying. In fact, it is our considered conclusion that they have been the decisive factor—that if they had not appeared no increase of railway passenger traffic would have yet begun. Another important factor has been reduction of fares; but if they had been the decisive factor traffic would have increased relatively about the same on all trains—which it decidedly has not.

The original streamliners were designed and built to

compete with private automobiles and buses in daylight service. There already were under way some developments of importance which greatly stimulated, and help to explain, the speedy evolution that added lightweight, high-speed and unprecedentedly luxurious sleeping car trains. Air-conditioning for passenger cars already had been invented, and as a matter of course was installed in the lightweight streamliners. Numerous other improvements were being made available for all kinds of passenger cars, especially sleeping cars, which, of course, were all utilized in the cars for the streamliners. Light metals and high-strength corrosion-resistant alloys had recently become available for structural use. A Diesel-electric locomotive installed on one of the first two streamliners immediately demonstrated for the first time that this kind of power could be used successfully in high-speed service. And the manufacturers of steam locomotives were not slow in showing they could contribute more than ever toward making and maintaining increased speeds.

The Public Goes Railway-Minded Again

But the most stimulating influence has been the attitude of the public. Railway managements made unusual efforts to publicize the original streamline trains, and were agreeably surprised by the response. One president who invited a much larger number to make an exhibition trip on his train than could be accommodated said ruefully, "I am like the Populist out in western Kansas who started out to raise hell and got an over-production."

Almost everybody he had invited had accepted; and he was going around town appealing to his closer friends to withdraw their acceptances.

The managements soon found there was latent as much public interest in railways as had been shown during their early construction, and that the streamliners were largely selling themselves by converting this latent interest into an active one. An event that attracted one of the biggest crowds at the Century of Progress in Chicago in 1934 was the arrival in the fair grounds of one of the original streamliners after a 1,000-mile non-stop run from Denver. Wherever the trains were put on exhibition they attracted thousands of people. It became the fashion in hundreds of communities for the people to drive down to the station or along the track to see them flash by. And the fact that they "flashed"—because, unlike most former trains, they were externally colored so they would flash—proved an advertising fact of importance. And, indeed, their most important contribution to the increase in railway passenger traffic probably has been that they have given the best *advertising* to railway passenger service that it ever has had.

Novelty, Glamour—and Also Real Service

But while their novelty and glamour has helped advertise them and all railway service, it has been the

actual performance of the trains that has enabled them to get and hold so much business. Their speeds, and also those of many other passenger trains, have been made faster for both short and long distances than any ever known before in this or any other country. And yet motive power, cars and tracks have been made and kept such that travel by train has become not only faster and more luxurious, but also more comfortable and fully as safe as ever before. There is nothing in all railway history more remarkable than that in a period of depression the railways have bought all these new trains and put them into service; have operated them day after day, month after month and now year after year at higher speeds than were ever attained or maintained; and have done these things without any reduction of the safety of either passengers or employees.

How do they pay? Nobody can answer that. The advertising and increased prestige they are giving railway management and service must be considered, and are probably more important to the individual railways upon which the trains operate, and to the railway industry as a whole, than their actual earnings. But their earnings are in most cases quite satisfactory—in many cases, extremely so.

Streamliners' Remarkable Record of Traffic and Earnings

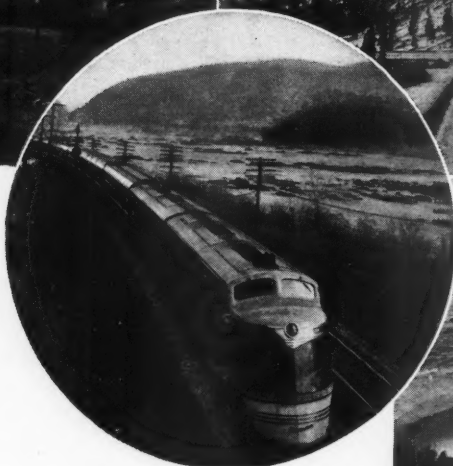
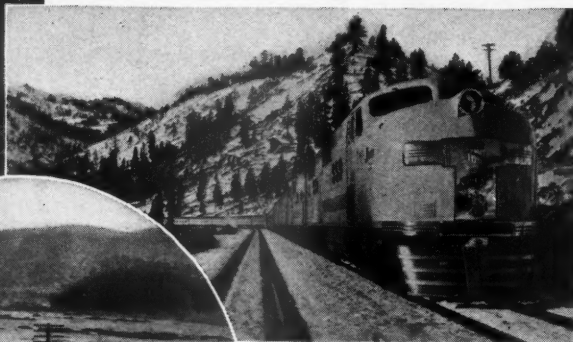
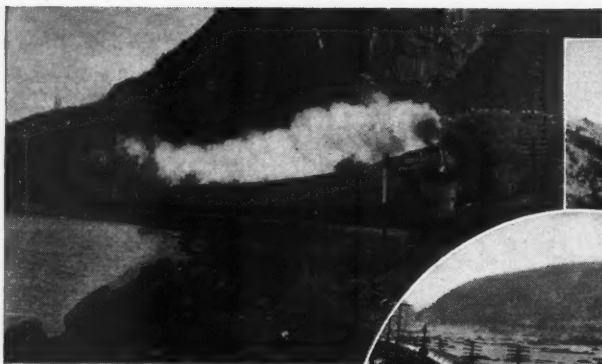
As already shown, in 1937 all the passenger trains of Class I railways carried an average of 59 passengers and made average earnings of \$1.50 per mile. In 1938 average number of passengers per train declined to 55 and average earnings per mile to \$1.45. How do the figures of the streamliners compare with these? There are given in an article elsewhere in this issue all the statistical data regarding streamline trains now available. The average numbers of passengers carried by 46 of them are stated, and show that 36 carry more than the average of 59 passengers carried by all trains in 1937; 33 an average of more than 75 passengers; 16 an average of more than 100 passengers; 6 an average of more than 125 passengers; two an average of 187 passengers and two an average of 344. In the same article are given the earnings of 49 trains. Of these 31 earned more than the \$1.50 average earnings per train-mile of all the passenger trains of Class I railways in 1937; 27 over \$1.75; 22 over \$2.00; 20 over \$2.50; 17 over \$2.75; and 5 over \$3.50—the earnings of the highest three being \$3.72, \$3.80 and \$4.92.

It was an old rule-of-thumb that any passenger train that earned more than \$1.00 a mile was making more than its out-of-pocket expenses and, therefore, worth keeping in service. Under modern conditions almost nobody, we believe, uses that old rule-of-thumb figure; but the earnings of a large majority of the streamliners leave no doubt that their ownership and operation are profitable and indicate they are showing the way toward making all passenger operation profitable.



Streamline Trains

**CAPTURE
IMAGINATION OF
AMERICAN PUBLIC**



From the Atlantic to the Pacific, and at Many Points Between Streamlined Trains Maintain High-Speed Schedules

Leading the Passenger Progress Parade

New lightweight equipment has established itself definitely and permanently in public favor

THE multitudes of people who filed through the new, lightweight, streamlined trains on their exhibition tours of the East, and the throngs that gathered in the dawn on lonely Western mesas to watch the trains go by, gave a graphic forecast, in 1934, of how such trains, and lightweight, colorful equipment in general, were to capture the imagination of the American public.

Early in 1934, railway passenger business was declining, and the apparently incurable nature of the disease was indicated by the fact that the depression merely accelerated a rate of decline that had set in long before. The decay had set in early and, by 1929, the year of greatest apparent prosperity in other business, railway passenger traffic was stubbornly reversing the almost universal trend upward by showing a decline of more than 245 million passengers as compared with 1921. The distressed and uncertain business conditions which followed the 1929 crash speeded up the decay, and, by 1933, a picture of utter and complete discouragement presented itself. In 1933, the number of passengers carried by the railways showed the appalling decline of 602,516,442, or 58 per cent, as compared with 1921.

Courage and Imagination

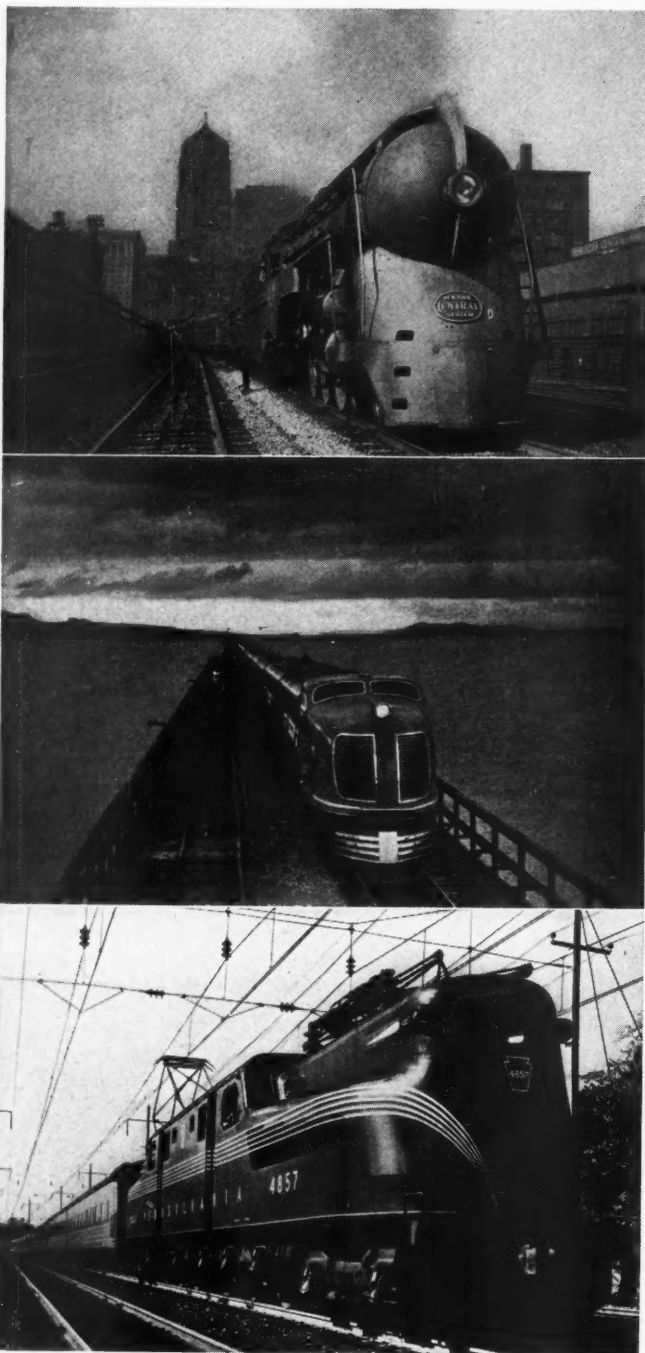
Radical measures were necessary to stop that inexorable downward swoop of the curve representing passenger traffic results. Fortunately, among the railway executives, there were men who were willing to take such

measures, and who possessed the necessary imagination and courage to carry out plans that might well have caused an abrupt termination of their careers if they had failed. But, they didn't fail. Instead, they succeeded magnificently. The new trains, of amazing design and operated at amazing speeds, captured the public imagination. The downward trend of passenger traffic, that had persisted through more than 12 years of prosperity and depression alike, faltered at the bottom and then started upward.

While it still has a long way to go, the mere fact of stopping the decline was an outstanding achievement. Since 1933, passenger traffic has fluctuated, but in the five years from 1934 to 1938 inclusive, an annual average of 34,171,771 *more* passengers have used railway trains in each year beginning with 1934. In other words, 170,858,857 *more* passengers have been handled in the five years than if the 1933 figures had been maintained, and, with a 12-year history of decline previously, there is little reason to believe that even those meager figures could otherwise have been maintained. The results of the individual new lightweight trains are given in the statistical section of this issue. While these figures are striking enough in their own right, they represent only a small part of what such trains have meant to all railways in publicity value. In addition to the new trains operated as a unit, there have been many lightweight cars added to other trains, with a view to ultimate complete streamlining, as outlined elsewhere in this issue



Where the Streamliners Run



Diverse Types of Power—Steam, Diesel-Electric and Electric, Haul the Streamliners on Their High-Speed Runs

and a number of rebuilt and remodeled trains dealt with later in this article.

The original trains were intended for relatively short, daylight runs, largely as a means of counteracting bus competition. Almost at once, however, it was realized that such trains had other uses, and streamlined, lightweight sleeping-car trains for transcontinental and other long-distance service were designed and ordered only a few months after the first streamliners made their appearance.

Giving Coach Passengers a Break

As early as 1929, certain "de luxe" coach trains, such as the Blue Comet (C. R. R. of N. J.) between Atlantic City and New York and the Daylight (S. P.) between San Francisco and Los Angeles, were attracting pas-

sengers by their comfort and convenience. With the advent of the streamliners, however, a third inducement—speed—was added to the other two, and coach travel really began to increase. The use of two of the smaller Zephyrs (C. B. & Q.) as Advance Denver Zephyrs was a revelation in many respects, in that it proved that passengers accustomed to the rigors of overnight bus travel could be brought back to overnight coach trains, with their advantages of greater speed and greater comfort.

Meanwhile, the coach and tourist cars of the Los Angeles Limited (U. P.) were made into a separate train, later christened the Challenger. By the exercise of forethought and ingenuity, not to mention the expenditure of some \$600,000 in remodeling the equipment, this train, with its many innovations, was developed into an outstanding money-maker, and San Francisco and Portland Challengers are now run in addition to the original Chicago-Los Angeles train. The El Capitan (A. T. & S. F.) and the Silver Meteor (Seaboard) are the present overnight long distance new streamliners, although coach business is an important item on many of the other long distance trains of lightweight streamlined design. On July 28, 1939, the Trail Blazer (Penna.) and the Pacemaker (N. Y. C.), remodeled coach trains with excellent accommodations, were established on a fast schedule between Chicago and New York, and have proved extremely popular. The Pacemaker, for example carried a total of 14,500 passengers in August with a gross revenue of nearly \$250,000. On August 19, the Pacemaker carried 976 passengers—540 eastbound and 436 westbound.

Rebuilt Trains

In addition to the new lightweight streamlined trains, a number of trains have been rebuilt and remodeled to conform with modern ideas of comfort, color and speed. Such trains include the Mercury (N. Y. C.); the Royal Blue and Capitol Limited (B. & O.); the Asa Packer and John Wilkes (L. V.); the Mountaineer (N. Y. O. & W.) and the Forty-Niner (C. & N. W.-S. P.-U. P.). The results obtained by such trains have been highly satisfactory. The Royal Blue, for example, handles some 5,000 passengers annually. The Mercury, operating between Cleveland and Detroit on a fast schedule, has piled up 346,995 train miles and approximately 46 million passenger miles in the first 34 months of its operation, and showed the highly satisfactory average revenue of \$3.18 per train mile throughout the period.

Sleeping Car Business

The development of long distance, first-class travel on the new streamliners, as inaugurated on June 6, 1935, by the City of Portland (U. P.) has been a steady and money-making procedure, whether on the trains making daily runs or those with periodical "sailings." The 23 new lightweight streamlined train units on which sleeping cars are operated, accounted for some 35 million sleeping car miles and handled 262,384 passengers during the fiscal year ending on July 31, 1939. In addition, the eight rebuilt trains in high-speed service on which sleeping cars are operated, accounted for 9,700,000 sleeping-car miles and 94,233 passengers.

The foregoing figures pertain solely to Pullman Company revenues and operations, and do not reflect the passenger revenues derived by the railroads from the same trains, which are more than three times the indicated Pullman earnings. In other words, the total rail and Pullman revenue from the 13 listed trains was more than \$17,000,000, for the specified 12-month period, of which approximately \$13,000,000 or an average of \$1,-

000,000 per train went directly to the railroads and the balance of slightly over \$4,000,000 to the Pullman Company. Since the roads also share to some extent in Pullman revenue, the actual gross return to the Pullman Company was somewhat less than the indicated amount, with corresponding increment of the railroad's final proportion of the total passenger revenue.

What of the Future?

The "Passenger Progress Almanac" included with this article gives some of the highlights of the amazing developments in this field in the last five years. The inevitable question to be asked is: "What of the Future?" The results obtained from the passenger progress in the last five years, as outlined in this issue, should shout the answer to high heaven. More and more new lightweight trains is the inevitable deduction to be drawn from these data.

A proof of this in concrete form is the number of trains recently delivered and now on order. The Southern took delivery in September of six two-car streamlined trains. The Chicago & North Western supplanted its conventional type train with two spic and span new Four Hundreds on September 24. Two new Daylights are being built to supplement those now running on the Coast line of the Southern Pacific, while the Missouri Pacific has two new "Eagles" on their way out of the carbuilders' shops. The New York-Florida trade will luxuriate this winter in two companion trains to the Silver Meteor, now on order for the Seaboard; while the Atlantic Coast Line and the Florida East Coast each have two new lightweight, streamlined trains on order. The Chicago, North Shore & Milwaukee has ordered two streamliners capable of 100 m. p. h. speed for its electric line between Chicago and Milwaukee. The Chicago, Rock Island & Pacific is expecting delivery late this month of two new and larger Rockets for Chicago-Denver service, and the U. P.-C. & N. W. have ordered a new City of Los Angeles, and, in conjunction with the Southern Pacific, a new City of San Francisco. The New York Central and the Pennsylvania will shortly accept delivery of one train each for their Chicago-Detroit service.

There—so he who runs may read—are the prospects for the immediate future. As to the distant future, speculation is idle except for the fact that passenger progress will continue, perhaps on a scale now only dimly imaginable, much as the present actuality was only a dream—if that—five years ago.

Passenger Progress Almanac, 1934-1939

February 12, 1934	First streamliner, the City of Salina, (U. P.) delivered at Pullman, (Chicago), Ill., and started on exhibition tour.	January 2, 1935	Standard steam train, the Four Hundred, (C. & N. W.) entered Chicago-Twin Cities service on a 6-hr. 30-min. basis.
April 18, 1934	Pioneer Zephyr, (C. B. & Q.) first Diesel-electric powered streamliner, delivered at Philadelphia, Pa., and started on exhibition tour.	January 28, 1935	First streamlined electric locomotive (Penna.) pulled train between Washington and Philadelphia.
October, 1934	City of Portland (U. P.) first streamliner with sleeper accommodations, delivered for exhibition tour.	January 31, 1935	City of Salina (U. P.) placed in revenue service between Kansas City, Mo., and Salina, Kans.
November 11, 1934	Pioneer Zephyr becomes first streamliner to enter revenue service, between Lincoln, Nebr., Omaha, and Kansas City, Mo.	February 19, 1935	Commodore Vanderbilt (N. Y. C.) first steam streamlined locomotive put in service, hauling the Twentieth Century Limited.
		April 6, 1935	Flying Yankee (B. & M.) placed in revenue service between Boston, Mass., and Bangor, Me.
		April 21, 1935	Twin Zephyrs (C. B. & Q.) placed in revenue service between Chicago and the Twin Cities.
		May 29, 1935	Hiawathas (C. M. St. P. & P.) entered revenue service between Chicago and Twin Cities.
		June 2, 1935	Twin Zephyrs began double daily service.
		June 5, 1935	Comet (N. Y., N. H. & H.) entered revenue service between Boston and Providence.
		June 6, 1935	City of Portland (U. P.) began "sailings" five times monthly between Chicago and Portland.
		June 6, 1935	First enclosed section berth placed in service.
		June 24, 1935	Royal Blue, (B. & O.) entered revenue service between Washington and Jersey City.
		July 1, 1935	Abraham Lincoln (Alton) entered revenue service between Chicago and St. Louis, Mo.
		July 10, 1935	The Rebels (G. M. & N.) entered revenue service between New Orleans, La., and Jackson, Tenn.
		August 21, 1935	Stewardess service inaugurated on the Challenger (U. P.).
		October 28, 1935	Mark Twain Zephyr (C. B. & Q.) entered revenue service between St. Louis, Mo., and Burlington, Ia.
		May 12, 1936	Super Chief (A. T. & S. F.) established on 39 hr. 45 min. schedule between Chicago and Los Angeles, Cal., with standard equipment.
		May 15, 1936	City of Los Angeles (U. P.) entered revenue service between Chicago and Los Angeles, Cal., on 39 hr. 45 min. schedule.
		May 17, 1936	Green Diamond (I. C.) entered revenue service between Chicago and St. Louis, Mo.
		May 31, 1936	Advance Denver Zephyrs (C. B. & Q.) established by use of the coach streamliners, the Pioneer and the Mark Twain on 16 hr. schedule.
		June 14, 1936	City of San Francisco (U. P.) entered revenue service between Chicago and San Francisco.
		June 18, 1936	City of Denver (U. P.) entered revenue service between Chicago and Denver on 16 hr. schedule.
		July 1, 1936	Canada's first streamlined locomotives and cars installed on International Limited (C. N.) and Mapleleaf (C. N.).

July 15, 1936	Mercury (N. Y. C.) rebuilt streamlined train entered revenue service between Cleveland and Detroit.	January 2, 1938	New 17-car City of San Francisco (U. P.) placed in revenue service between Chicago and San Francisco.
August 1, 1936	Two-car streamliner (N. Y., N. H. & H.) placed in revenue service between Bridgeport and Hartford.	January 5, 1938	Streamline connection established to Mobile for Rebels (G. M. & N.).
September 27, 1936	First four lightweight trains in Canada placed in service by Canadian Pacific. These trains are now operated in conjunction with standard cars.	February 15, 1938	San Diegan (A. T. & S. F.) placed in revenue service between Los Angeles and San Diego.
November 7, 1936	Denver Zephyrs (C. B. & Q.) placed in revenue service between Chicago and Denver, Col.	February 20, 1938	Standard equipment on Super Chief (A. T. & S. F.) superseded by lightweight equipment.
December 1, 1936	Sam Houston Zephyr (C. B. & Q.) placed in revenue service between Fort Worth and Kansas City.	February 20, 1938	El Capitan (A. T. & S. F.), first streamline long distance coach train placed in revenue service between Chicago and Los Angeles.
December 3, 1936	Lightweight cars for test purposes run by A. T. & S. F., the forerunner of 15 streamlined trains.	February 22, 1938	The six standard trains necessary to operate the daily Chief (A. T. & S. F.) superseded by lightweight equipment.
March 21, 1937	Daylights (S. P.) placed in service between Los Angeles and San Francisco.	April 17, 1938	New Chicagoan and Kansas Citian (A. T. & S. F.) placed in revenue service between Chicago and Kansas City.
April 25, 1937	First stewardess service in the East established on the Shenandoah (B. & O.).	June 15, 1938	New lightweight equipment superseded standard equipment on Twentieth Century Limited (N. Y. C.) and Broadway Limited (Penna.). Both roads also inaugurated many lightweight cars on several others of their through trains.
April 25, 1937	Royal Blue (B. & O.) a remodeled train placed in revenue service between Washington and Jersey City to supplant previous streamlined train sent to Alton for service.	June 15, 1938	First master bedroom car placed in revenue service.
May 28, 1937	Original Hiawatha equipment placed in service on the Chippewa (C. M. St. P. & P.) for service between Chicago and Iron Mountain.	July 1, 1938	Golden Gate (A. T. & S. F.) first coordinated streamline train-bus service established between San Francisco and Los Angeles. (Bus—San Francisco-Oakland; streamliner—Oakland-Bakersfield; bus—Bakersfield-Los Angeles.)
July 8, 1937	The Forty-Niner (C. & N. W.-U. P.-S. P.), a rebuilt train, placed in high speed service between Chicago and San Francisco to supplement streamliner service.	January 21, 1939	Morning Hiawathas (C. M. St. P. & P.) established between Chicago and Twin Cities.
July 26, 1937	Ann Rutledge (Alton) placed in service between Chicago and St. Louis.	February 2, 1939	Silver Meteor (S. A. L.) streamline coach train placed in revenue service between New York, Miami, Florida and St. Petersburg.
August, 1937	First roomette sleeping car placed in service.	April 30, 1939	General Pershing Zephyr (C. B. & Q.) placed in revenue service between St. Louis and Kansas City.
August 25, 1937	Texas Rocket (C. R. I. & P.) placed in revenue service between Fort Worth and Houston. This train is now used as second Kansas City-Dallas Rocket.	May 22, 1939	Treasure Island (C. & N. W.-U. P.-S. P.) a new fast train placed in revenue service between Chicago and San Francisco.
September 19, 1937	Sunbeams (S. P.) placed in revenue service between Houston and Dallas.	June 10, 1939	Exposition Flyer (C. B. & Q.-D. & R. G. W.-W. P.) a new fast train placed in revenue service between Chicago and San Francisco.
September 19, 1937	Peoria Rocket (C. R. I. & P.) placed in revenue service between Peoria and Chicago.	June 10, 1939	Standard steam train placed in revenue service between Chicago and Denver on City of Denver schedule to take care of overflow of passengers.
September 25, 1937	Des Moines Rocket (C. R. I. & P.) placed in revenue service between Des Moines and Chicago.	June 10, 1939	Overnite Denverite, a standard train, placed in revenue service on the schedule of the Denver Zephyr to handle overflow business.
September 25, 1937	Kansas City-Minneapolis Rockets (C. R. I. & P.) placed in revenue service.	July 28, 1939	Trail Blazer (Penna.) Pacemaker (N. Y. C.) rebuilt fast coach trains, established between New York and Chicago.
October 18, 1937	Denver Rocket (C. R. I. & P.) placed in revenue service between Denver and Kansas City. This train later assigned to Kansas City-Oklahoma City service and now operates between Kansas City and Dallas.	September, 1939	Six 2-car streamliners placed in revenue service by Southern.
December 13, 1937	Crusader (Reading) placed in revenue service between New York and Philadelphia.	September 24, 1939	Streamline trains replace the standard "400" (C. & N. W.) between Chicago and Minneapolis.
December 27, 1937	New 17-car City of Los Angeles (U. P.) placed in service between Chicago and Los Angeles.		

Statistics Prove Success of Streamliners

New trains show uniformly satisfactory results in a country-wide survey of their operations

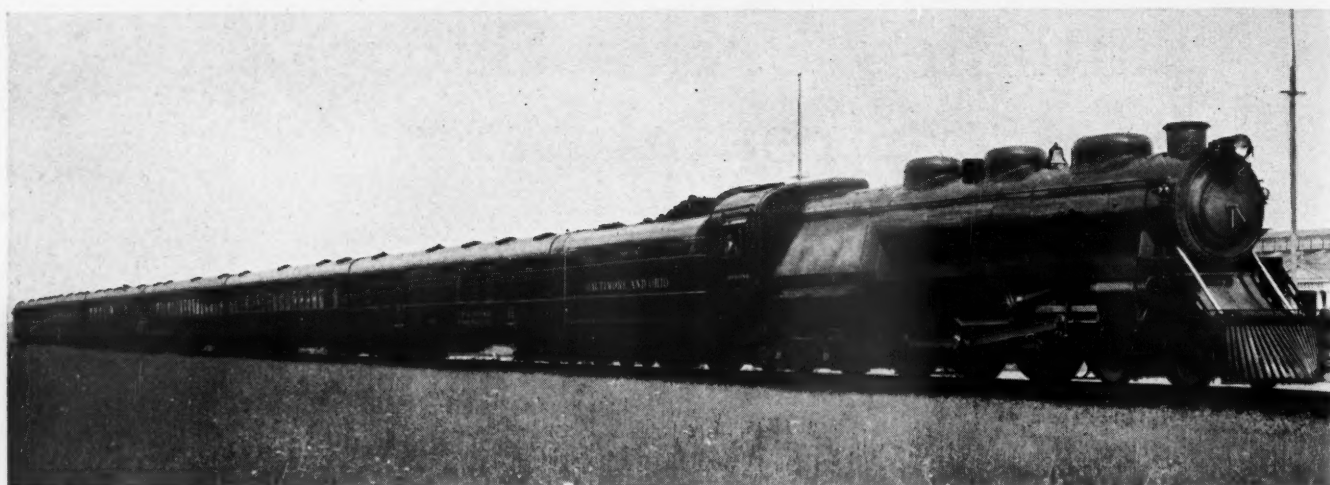


They Started It All

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Abraham Lincoln Ann Rutledge

(2 trains)

Alton

Weight of train:	785,300 lb.
Consist:	8 cars and locomotive—1 baggage-smoker; 2 chair; 1 dining-lunch counter; 1 lounge; 2 parlor; 1 parlor-observation
Placed in service:	July 1, 1935
Operated between:	Chicago and St. Louis (1 round trip daily—each train)
Daily mileage:	564
Overall scheduled speed:	57.8 m.p.h.

Statistics

July 1, 1935, to June 1, 1939

Total train miles:	1,222,600
Total passengers handled:	711,001
Total passenger miles:	146,920,797
Average passengers per train:	120
Revenue per train mile:	\$2.79

Chicagoan Kansas Citian

(2 trains)

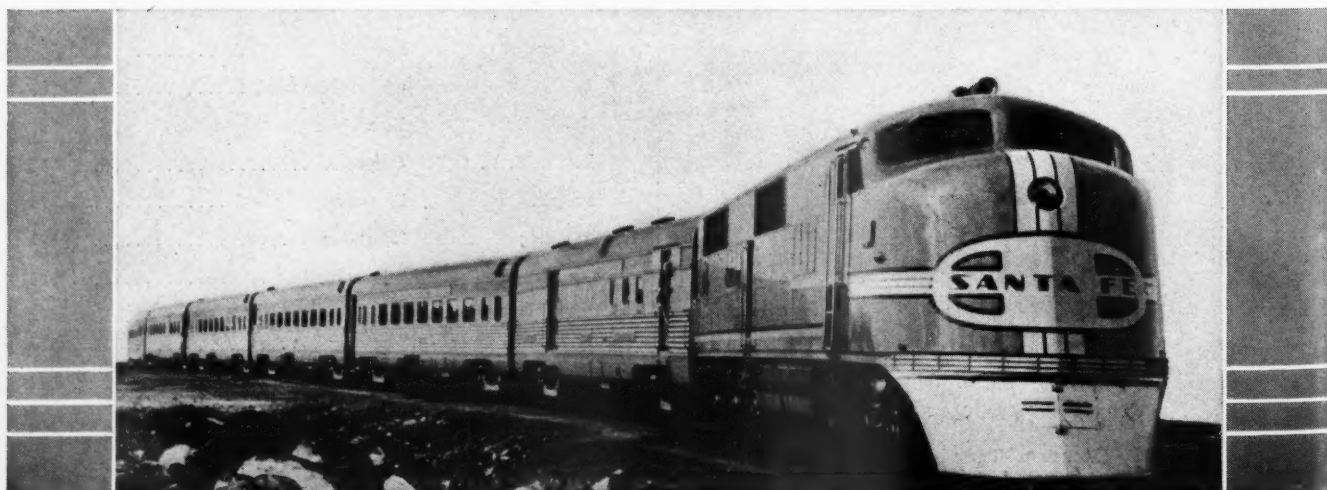
Atchison, Topeka & Santa Fe

Weight of each train:	620,000 lb.
Consist:	7 cars—1 power unit; 1 baggage-mail; 2 chair cars; 1 club-chair; 1 diner; 1 parlor observation. On week ends, 1 extra chair car added regularly to each train.
Placed in service:	April 17, 1938
Operated between:	Chicago and Wichita (1 trip in each direction per train daily)
Daily mileage per train:	671
Overall scheduled speed:	60 m.p.h.

Statistics

April 17, 1938, to June 1, 1939

Total train miles:	556,780
Total passengers handled:	164,503
Total passenger miles:	42,799,016
Average passengers per train:	79
Revenue per train mile:	\$1.68





Super Chief

(2 trains)

Atchison, Topeka & Santa Fe

Weight of train (cars only):	1,028,000 lb.
Consist:	11 cars—2 power units; 1 club-baggage; 1 club-lounge; 1 diner; 5 sleepers; 1 sleeper-observation.
Placed in service:	1st train—June 15, 1937 2nd train—February 22, 1938
Operated between:	Chicago and Los Angeles (1 round trip per train per week)
Weekly mileage per train:	4,456
Overall scheduled speed:	56.6 m.p.h.

Statistics

June 15, 1937, to June 1, 1939

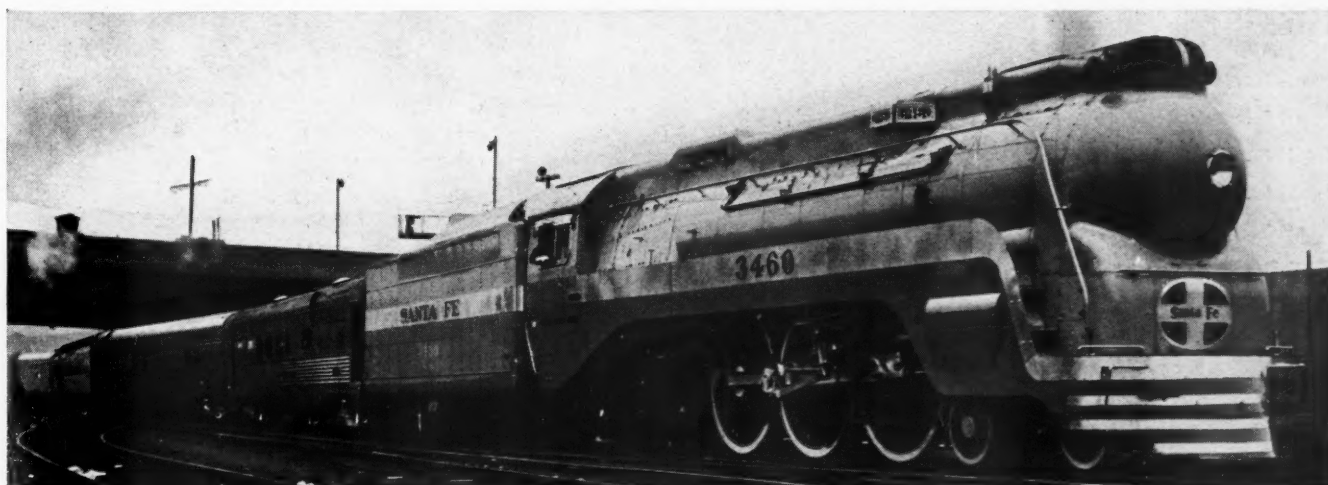
Total train miles:	748,568
Total passengers handled:	28,933
Total passenger miles:	60,086,144
Average passengers per train:	81
Revenue per train mile:	\$2.22

Chief

(6 trains)

Atchison, Topeka & Santa Fe

Maximum weight of train: (Cars only)	1,320,000 lb.
Consist:	11 cars—1 mail; 1 baggage-mail; 1 club-baggage; 1 club-lounge; 1 diner; 5 sleeping cars; 1 sleeper-observation. (Additional lightweight sleeping cars are added as required)
Placed in service:	February 22, 1938 (Date lightweight equipment replaced former standard trains)
Operated between:	Chicago and Los Angeles (Each train in turnaround service)
Average daily mileage per train:	743
Overall scheduled speed:	47.6 m.p.h.
Total train miles:	2,067,584 (Made by present lightweight trains)





El Capitan

(2 trains)

Atchison, Topeka & Santa Fe

Weight of train (cars only):	526,000 lb.
Consist:	7 cars—1 power unit; 1 baggage-dormitory-chair car; 2 chair cars; 1 chair-observation; 1 lunch counter-dining car. (Consist increased in summer season by 2 or 3 chair cars and 1 diner, as required. Additional power unit then added.)
Placed in service:	February 22, 1938
Operated between:	Chicago and Los Angeles (1 round trip per train per week)
Weekly mileage per train:	4,456
Overall scheduled speed:	56.6 m.p.h.

Statistics

February 22, 1938, to June 1, 1939

Total train miles:	587,875
Total passengers handled:	35,100
Total passenger miles:	60,033,597
Average passengers per train:	102
Revenue per train mile:	\$1.82

Golden Gates

(2 trains)

Atchison, Topeka & Santa Fe

Weight of train (cars only):	622,000 lb.
Consist:	7 cars—1 power unit; 1 baggage-chair; 2 chair; 1 chair-club-bar; 1 lunch counter-diner; 1 chair-observation.
Placed in service:	July 1, 1938
Operated between:	Oakland and Bakersfield (1 round trip daily for each train in connection with co-ordinated bus service—San Francisco to Los Angeles.)
Daily mileage per train:	626
Overall scheduled speed:	56.1 m.p.h.

Statistics

July 1, 1938, to June 1, 1939

Total train miles:	419,420
Total passengers handled:	214,562
Total passenger miles:	42,987,628
Average passengers per train:	102
Revenue per train mile:	\$1.39





San Diegan

Atchison, Topeka & Santa Fe

Weight of train (cars only):	694,000 lb.
Consist:	8 cars—1 power unit; 1 baggage mail; 4 chair cars; 1 tavern-lunch counter; 1 parlor-observation. (From 2 to 3 chair cars added for week-end traffic)
Placed in service:	March 27, 1938
Operated between:	Los Angeles and San Diego (2 round trips daily)
Daily mileage:	512
Overall scheduled speed:	52.8 m.p.h.

Statistics

March 27, 1938, to June 1, 1939

Total train miles:	217,424
Total passengers handled:	229,778
Total passenger miles:	27,040,980
Average passengers per train:	124
Revenue per train mile:	\$1.69

Flying Yankee

Boston & Maine

(Maine Central)

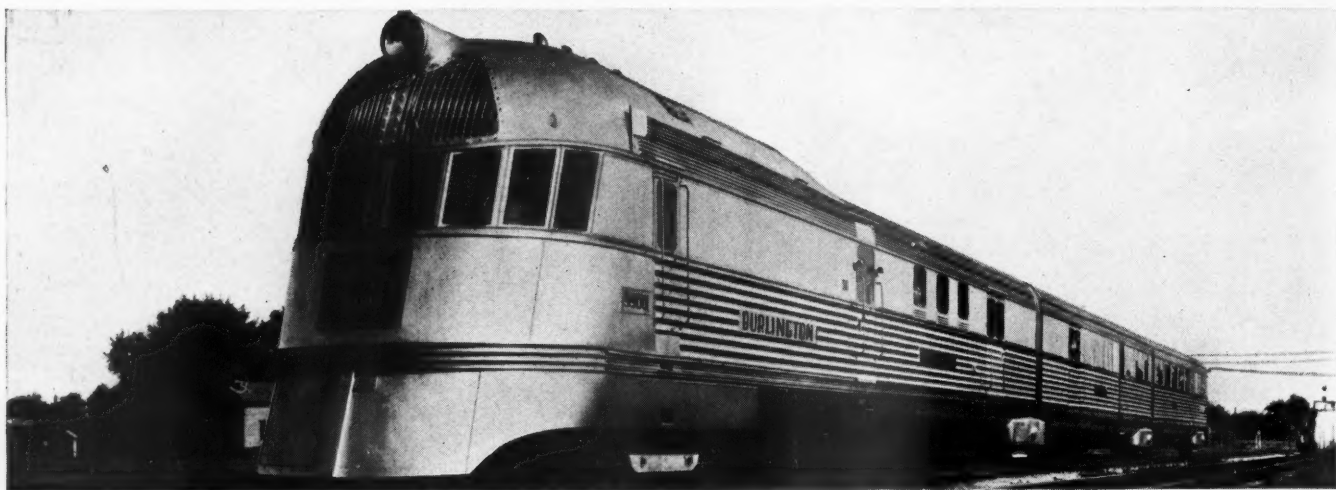
Weight of train:	231,600 lb.
Consist:	3 cars—1 power-baggage-buffet; 1 coach; 1 coach-observation.
Placed in service:	April, 1935
Operated between:	(B. & M.) Portland Me. and Boston, Mass. (2 round trips daily except Sunday) (Me. Cent.) Portland, Me., and Bangor. (1 round trip daily except Sunday)
Daily mileage:	733 (6 days a week)
Overall scheduled speed:	63 m.p.h. (B. & M.) 45 m.p.h. (Me. Cent.)
On time percentage:	92.1 per cent

Statistics

April 1, 1935, to May 31, 1939

Total train miles:	764,210
Total passenger handled:	B. & M.: 361,955 Me. Cent.: 221,748
	583,703
Revenue per train mile:	B. & M.: \$1.38 Me. Cent.: \$1.31





Pioneer Zephyr

Chicago, Burlington & Quincy

Weight of train:	302,800 lb.
Consist:	4 cars—1 power-baggage-mail; 1 dinette-coach; 1 coach; 1 coach-parlor.
Placed in service:	November 11, 1934
Operated between:	Lincoln-Omaha-Kansas City (1 round trip daily)
Daily mileage:	500
Overall scheduled speed:	47 m.p.h.
On time percentage:	93.8 per cent

Statistics

November 11, 1934, to June 1, 1939

Total train miles	894,256
Total passengers handled:	262,201
Total passenger miles:	38,518,713
Average passengers per train:	43
Revenue per train mile:	\$1.09

Sam Houston Zephyr Texas Rocket

(2 trains)

Chicago, Burlington & Quincy

(Chicago, Rock Island & Pacific)

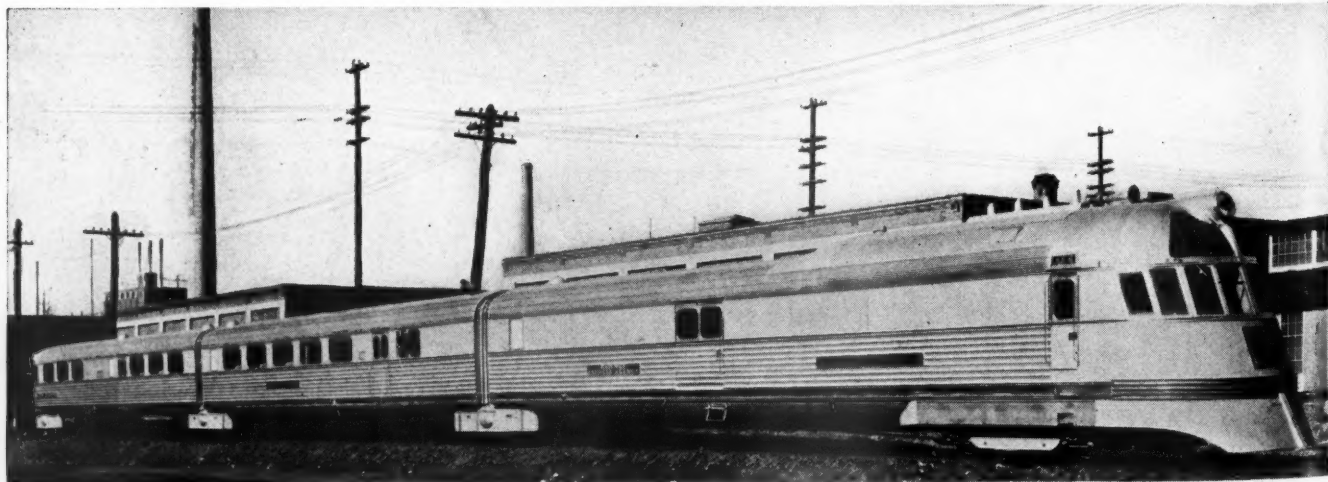
Weight of train:	288,700
Consist:	4 cars—1 power-baggage; 1 dinette-coach; 1 coach; 1 coach-parlor.
Placed in service:	April 21, 1935
Operated between:	Fort Worth-Dallas-Houston (1 round trip daily for each train)
Daily mileage per train:	566
Overall scheduled speed:	66.6 m.p.h.
On time percentage:	91.7 per cent

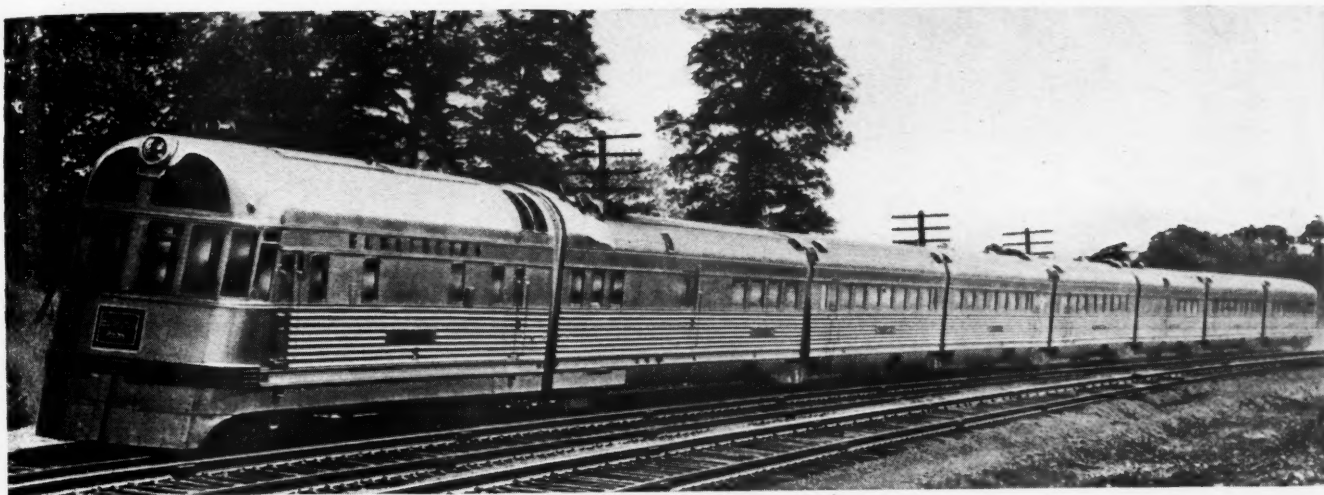
Statistics

April 21, 1935, to June 1, 1939

Total train miles:	1,917,231
Total passengers handled:	371,538
Total passenger miles:	98,155,827
Average passengers per train:	51
Revenue per train mile:	\$1.03

Remarks: These Zephyrs are the original Twin Zephyrs, operated in various service following their release from the Chicago-Minneapolis run.





Twin Zephyrs

(2 trains)

Chicago, Burlington & Quincy

Weight of train:	759,420 lb.
Consist:	8 cars—1 power unit; 1 baggage-tavern; 2 coaches; 1 dinette-coach; 1 diner; 1 parlor car; 1 parlor-lounge.
Placed in service:	December 18, 1936 (In place of original Twin Zephyrs assigned to other service)
Operated between:	Chicago and Minneapolis (1 round trip daily for each train)
Daily mileage per train:	882
Overall scheduled speed:	66.6 m.p.h. (Chicago-St. Paul)
On time percentage:	91.8 per cent

Statistics

December 18, 1936, to June 1, 1939

Total train miles:	1,572,123
Total passengers handled:	509,485
Total passenger miles:	151,670,810
Average passengers per train:	97
Revenue per train mile:	\$1.82

Denver Zephyrs

(2 trains)

Chicago, Burlington & Quincy

Weight of train:	1,563,545 lb.
Consist:	14 cars—2 power units; 1 mail-express; 1 baggage-tavern; 1 dinette-coach; 2 coaches; 1 diner; 3 sleeping cars; 2 bedroom cars; 1 parlor-lounge.
Placed in service:	November 8, 1936
Operated between:	Chicago and Denver (1 train in each direction daily)
Daily mileage per train:	1,036
Overall scheduled speed:	64.8 m.p.h.
On time percentage:	92.5 per cent

Statistics

November 8, 1936, to June 1, 1939

Total train miles:	1,940,881
Total passengers handled:	385,861
Total passenger miles:	229,239,242
Average passengers per train:	117
Revenue per train mile:	\$2.61





Mark Twain Zephyr

Chicago, Burlington & Quincy

Weight of train: 246,540 lb.
 Consist: 4 cars—1 power-baggage; 1 baggage-express; 1 dinette coach; 1 coach-parlor.
 Placed in service: October 28, 1935
 Operated between: St. Louis and Kansas City (1 round trip daily)
 Daily mileage: 558
 Overall scheduled speed: 55.8 m.p.h.
 On time percentage: 97.5 per cent

Statistics

October 28, 1935, to June 1, 1939

Total train miles: 696,082
 Total passengers handled: 198,817
 Total passenger miles: 27,835,032
 Average passengers per train: 40
 Revenue per train mile: 97 cents

Remarks: These figures include original operations of this train in St. Louis-Burlington, Iowa, service.

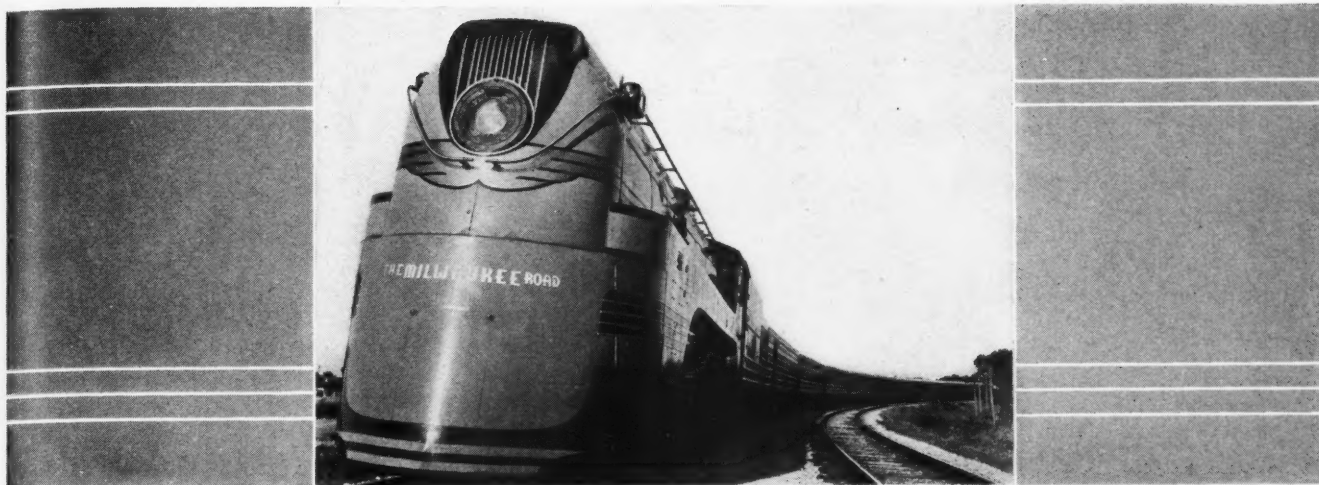
General Pershing Zephyr

Chicago, Burlington & Quincy

Weight of train: 609,820 lb.
 Consist: 4 cars—1 power-baggage; 2 coaches; 1 dining-parlor car.
 Placed in service: April 30, 1939
 Operated between: St. Louis and Kansas City (1 round trip daily)
 (Service extended by 1 round trip daily between Kansas City and Lincoln, Neb., on June 10, 1939.)
 Daily mileage: 978
 Overall scheduled speed: 55.8 m.p.h.
 On time percentage: 95.2 per cent

Remarks: Statistics are not yet available as to the passengers handled, earnings, etc., of this new train. Its operations, however, have been entirely satisfactory.





Morning Hiawatha

(2 trains)

Chicago, Milwaukee, St. Paul & Pacific

Weight of train:	Westbound: 1,836,000 lb. Eastbound: 1,658,000 lb.
Consist:	9 cars and locomotive — 1 express; 1 railway postoffice; 1 tap-buffet-express; 3 coaches; 1 diner; 1 drawing room-parlor; 1 beaver-tail parlor. (Note: 2 additional express cars regularly assigned to westbound schedule. Also extra passenger cars frequently added to a maximum of 14 cars)
Placed in service:	January 21, 1939
Operated between:	Chicago and Minneapolis (1 train in each direction daily)
Daily mileage per train:	422
Overall scheduled speed:	53.9 m.p.h. (Chicago-St. Paul)
On time percentage:	93 per cent

Statistics

January 21, 1939, to May 31, 1939

Total train miles:	110,904
Total passengers handled:	49,525
Total passenger miles:	9,103,622
Average passengers per train:	82
Revenue per train mile:	\$2.85

Afternoon Hiawatha

(2 trains)

Chicago, Milwaukee, St. Paul & Pacific

Weight of train:	1,428,000 lb.
Consist:	9 cars and locomotive—1 tap-buffet-express; 4 coaches; 1 diner; 2 drawing room-parlor; 1 beaver-tail parlor. (Note: Extra equipment to a maximum of 14 cars is frequently added.)
Placed in service:	May 29, 1935
Operated between:	Chicago and Minneapolis (1 train in each direction daily)
Daily mileage per train:	422
Overall scheduled speed:	63.1 m.p.h. (Chicago-St. Paul)
On time percentage:	93 per cent

Statistics

May 29, 1935, to May 31, 1939

Total train miles:	1,421,677
Total passengers handled:	1,101,057
Total passenger miles:	266,518,832
Average passengers per train:	187
Revenue per train mile:	\$3.80

Remarks: This train began as a 6-car train, now a standard 9-car train, frequently handling up to 14 cars. Original equipment has been replaced by new cars and new locomotives.





Peoria Rocket

Chicago, Rock Island & Pacific

Weight of train:	572,600 lb.
Consist:	5 cars—1 power unit; 1 baggage-dinette; 2 coaches; 1 observation-lounge.
Placed in service:	September 19, 1937
Operated between:	Chicago and Peoria (2 round trips daily)
Daily mileage:	644
Overall scheduled speed:	60.1 m.p.h.
On time percentage:	97 per cent

Statistics

September 19, 1937, to June 1, 1939

Total train miles:	418,600
Total passengers handled:	255,653
Total passenger miles:	34,758,563
Average passengers per train:	83
Revenue per train mile:	\$1.66

Des Moines Rocket

Chicago, Rock Island & Pacific

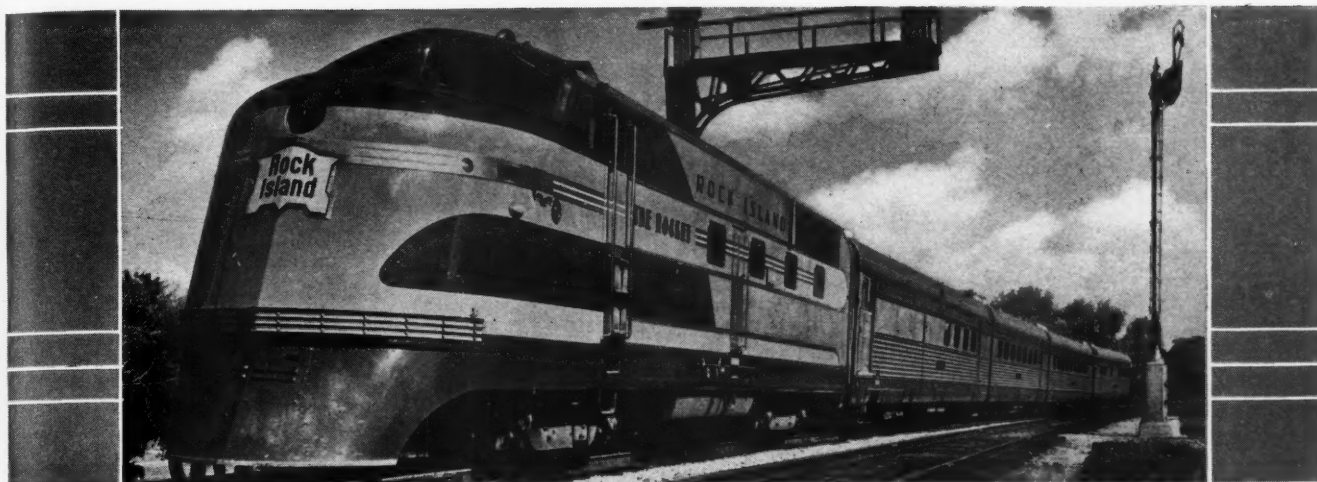
Weight of train:	572,600 lb.
Consist:	5 cars—1 power unit; 1 baggage-dinette; 2 coaches; 1 observation-lounge.
Placed in service:	September 26, 1937
Operated between:	Chicago and Des Moines (1 round trip daily)
Daily mileage:	716
Overall scheduled speed:	59.9 m.p.h.
On time percentage:	98.5 per cent

Statistics

September 26, 1937, to June 1, 1939

Total train miles:	459,686
Total passengers handled:	184,532
Total passenger miles:	42,385,830
Average passengers per train:	92
Revenue per train mile:	\$1.84





Kansas City-Dallas Rockets

(2 trains)

Chicago, Rock Island & Pacific

Weight of train:	580,984 lb.
Consist:	5 cars—1 power unit; 1 baggage-dinette; 1 coach; 1 coach-observation-lounge. 1 baggage-mail car added to each train May 15, 1939.
Placed in service:	November 15, 1938
Operated between:	Kansas City and Dallas (1 trip in each direction daily)
Daily mileage per train:	677
Overall scheduled speed:	62 m.p.h.
On time percentage:	97.3 per cent

Statistics

November 15, 1938, to June 30, 1939

(Including previous operation of one train as Kansas City-Oklahoma City Rocket)

Total train miles:	532,098
Total passengers handled:	117,311
Total passenger miles:	15,065,943
Average passengers per train:	46
(In Kansas City-Dallas Service)	
Revenue per train mile:	93.2 cents

Kansas City-Minneapolis Rockets

(2 trains)

Chicago, Rock Island & Pacific

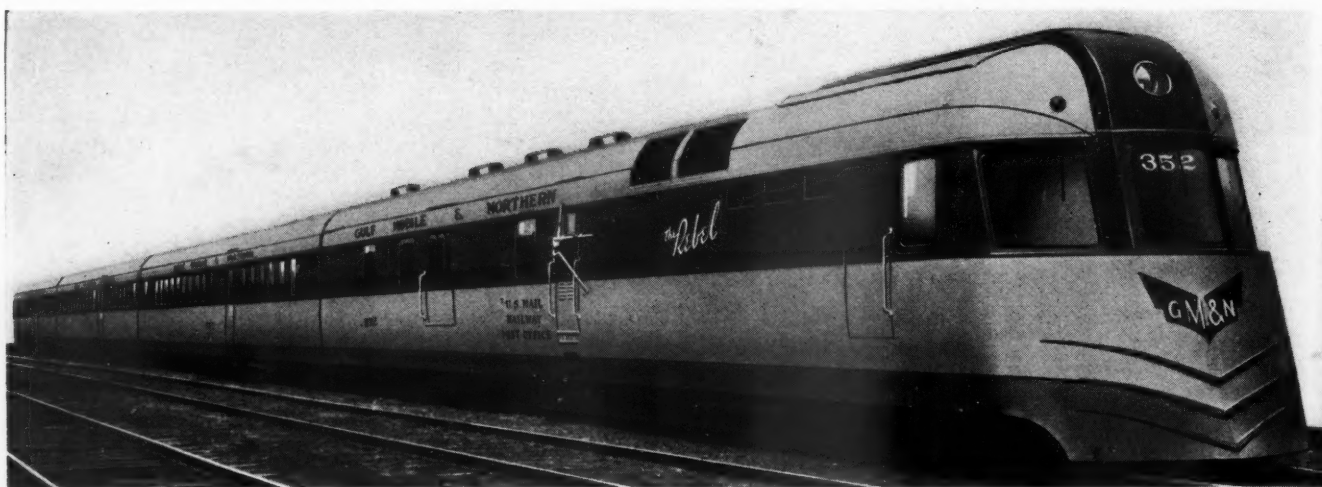
Weight of each train:	500,400 lb.
Consist:	4 cars—1 power unit; 1 baggage-dinette; 1 coach; 1 coach-observation-lounge.
Placed in service:	September 29, 1937
Operated between:	Kansas City and Minneapolis (Each train one way daily)
Daily mileage per train:	489
Overall scheduled speed:	53.8 m.p.h.
On time percentage:	97.4 per cent

Statistics

September 29, 1937, to June 1, 1939

Total train miles:	625,949
Total passengers handled:	142,826
Total passenger miles:	37,648,515
Average passengers per train:	60
Revenue per train mile:	\$1.23





The Rebels

(2 trains)

Gulf, Mobile & Northern

Maximum weight of train:	480,000 lb.
Maximum consist:	4 cars—1 power-mail-baggage car; 1 buffet-coach; 1 coach; 1 sleeper observation.
Placed in service:	July 1, 1935
Operated between:	New Orleans, La. and Jackson, Tenn. (One train in each direction daily)
Daily mileage per train:	497
On time percentage:	98.7 per cent

Statistics

July 10, 1935, to June 30, 1939

Total train miles:	1,330,515
Total passengers handled:	430,864
Revenue per train mile:	62 cents

Remarks: An extra car added to these trains daily between New Orleans and Jackson, Miss. An extra car also added daily between Union, Miss., and Jackson, Tenn., to and from the Mobile connection.

Green Diamond

Illinois Central

Weight of train:	460,000 lb.
Consist:	5 cars—1 power unit; 1 baggage-mail-express; 1 coach; 1 coach-diner; 1 lounge-diner.
Placed in service:	May 17, 1936.
Operated between:	Chicago and St. Louis (1 round trip daily)
Daily mileage:	588.4
Overall scheduled speed:	60 m.p.h.
On time percentage:	95 per cent

Statistics

May 17, 1936, to May 31, 1939

Total train miles:	586,903
Total passengers handled:	158,688
Total passenger miles:	37,794,302
Average passengers per train:	64
Revenue per train mile:	\$1.26





Twentieth Century Limited

(4 trains)

New York Central

Weight of train:	Locomotive and tender:	681,900 lb.
	Train:	1,730,515 lb.
		2,412,415 lb.
Consist:	13 cars—1 mail-baggage; 1 club-lounge; 1 roomette car; 2 roomette-bedroom cars; 3 compartment-bedroom-drawing room cars; 2 diners; 2 bedroom cars; 1 observation car.	
New trains placed in service:	June 15, 1938	
Operated between:	New York and Chicago	
Daily mileage per train:	961	
Overall scheduled speed:	60 m.p.h.	

Statistics

June 15, 1938, to May 31, 1939

Total train miles:	657,324
Total passengers handled:	63,637
Total passenger miles:	61,000,000
Average passengers per train:	93
Revenue per train mile:	\$3.43

The Comet

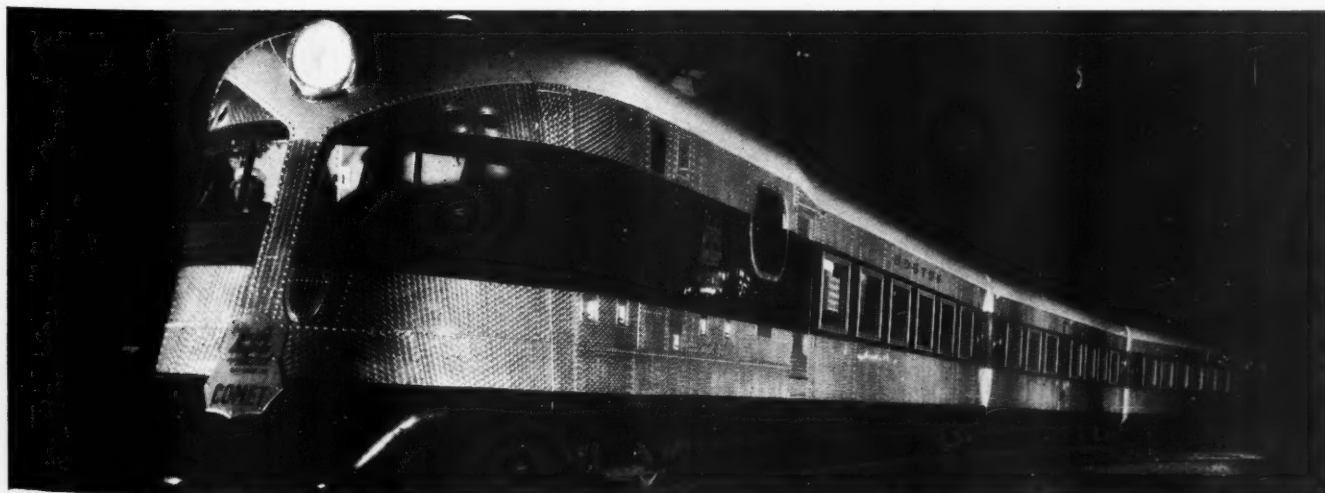
New York, New Haven & Hartford

Weight of train:	260,590 lb.
Consist:	3 cars—2 power-coach units; 1 coach; (this train has a power unit at each end to avoid turning).
Placed in service:	June 5, 1935
Operated between:	Boston, Mass. and Providence, R. I. (Five round trips week days; four round trips Sunday)
Daily mileage:	Week days—440 Sundays—352
Overall scheduled speed:	48 m.p.h.
On time percentage:	91 per cent

Statistics

June 5, 1935, to June 1, 1939

Total train miles:	475,240
Total passengers handled:	595,398
Total passenger miles:	19,661,947
Average passengers per train:	41
Revenue per train mile:	\$1.00
(Note: These figures include Sunday excursion service)	





Broadway Limited

(2 trains)

Pennsylvania

Weight of train: 1,033,000 lb.
(excluding locomotive)

Consist: 8 cars—1 mail; 1 baggage; 1 roomette car; 1 bar-lounge-bed-room car; 1 compartment-bed-room-drawing room car; 1 bed-room car; 1 master room-bed-room-buffet-observation car.

New trains placed in service: June 15, 1938

Operated between: New York and Chicago
(one trip in each direction daily)

Daily mileage per train: 907

Overall scheduled speed: 56.7 m.p.h.

Train miles: 691,667
(June 15, 1938, to June 30, 1939, inc.)

Remarks: In the period since streamlined equipment was introduced (June 15, 1938) the patronage of the Broadway Limited has increased 37.5 per cent over the previous average.

Crusader

Reading

Weight of train: 994,815 lb.

Consist: 5 cars—2 parlor-observation; 2 coaches; 1 dining-tavern car.

Placed in service: December 13, 1937

Operated between: Philadelphia and Jersey City
(New York)
(2 round trips daily)

Daily mileage: 361

Overall scheduled speed: 60 m.p.h.

Total train miles: 203,130

On time percentage: 96.6 per cent





↑
Silver Meteor
 Seaboard
 (Pennsylvania)

(Richmond, Fredericksburg & Potomac)

Weight of train:	1,055,934 lb.
Consist:	8 cars—1 power unit; 1 coach-baggage-dormitory car; 1 coach-tavern-lounge car; 1 diner; 3 coaches; 1 observation-lounge car.
Placed in service:	February 2, 1939
Operated between:	New York and Miami, Fla. New York and St. Petersburg, Fla.
Mileage:	895 (average per day) 1,361 (average per trip)
Overall scheduled speed:	55.8 m.p.h.
On time percentage:	93.9 per cent

Statistics

February 2, 1939, to June 30, 1939

Total train miles:	133,393
Total through passengers handled:	20,239
Revenue per train mile:	\$2.78

Remarks: From February 2, 1939, to June 5, 1939, this train operated from New York, every third day, alternately to Miami and St. Petersburg. Beginning June 5, through service New York to Wildwood, Fla., was inaugurated. Train is divided at Wildwood, one section operated to Miami, the other to St. Petersburg.

The Sunbeam

(2 trains)

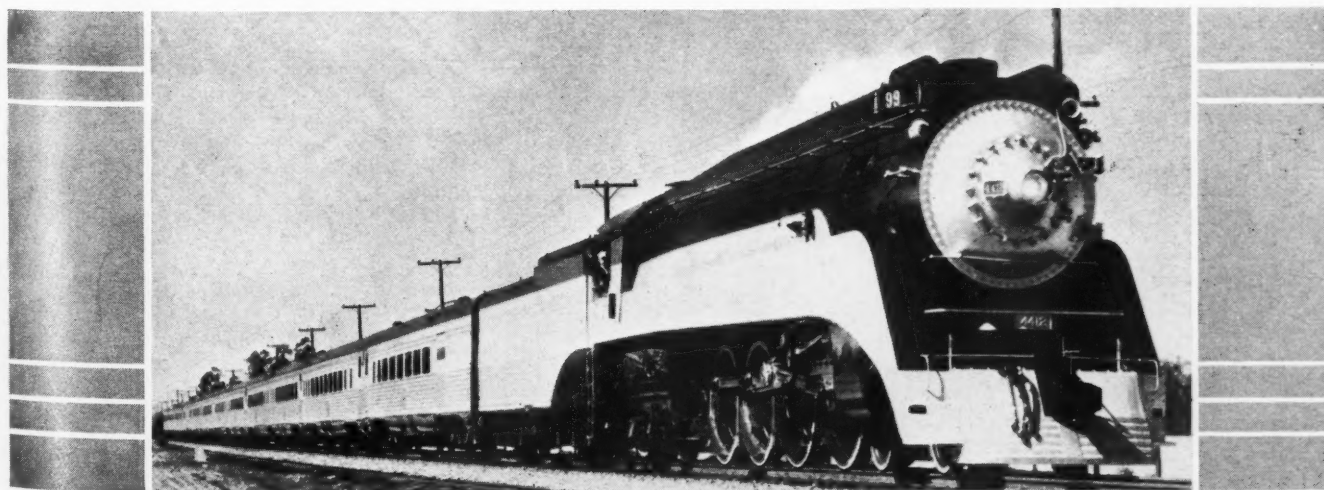
Southern Pacific

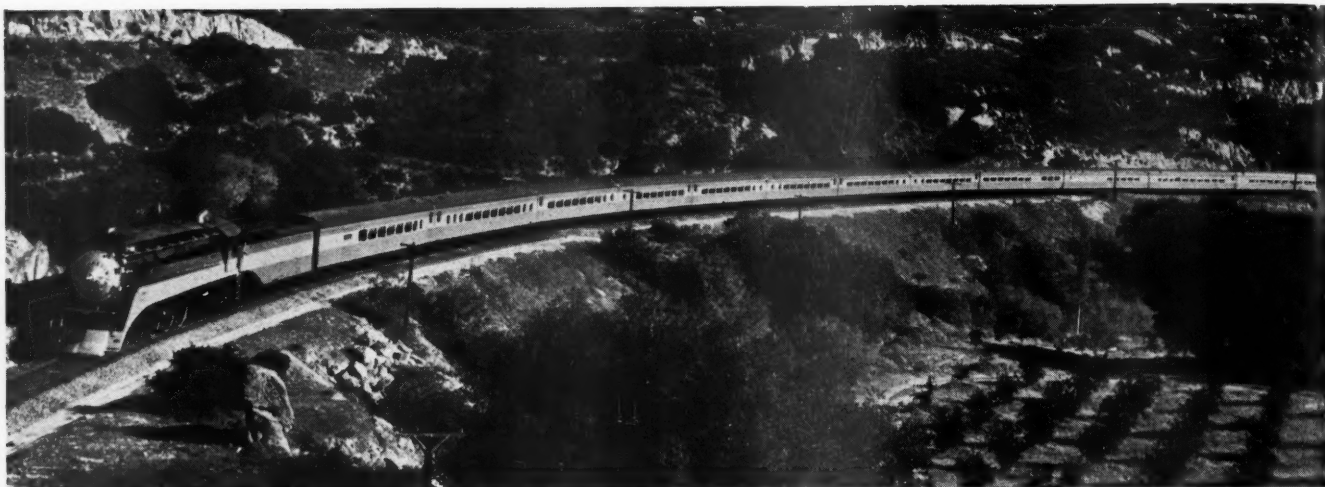
Weight of train:	694,700 lb.
Consist:	6 cars and locomotive—1 baggage; 2 coach-chair; 1 articulated coach-chair; 1 parlor; 1 diner-observation.
Placed in service:	September 19, 1937
Operated between:	Houston and Dallas, Texas (1 train in each direction daily)
Daily mileage per train:	264
Overall scheduled speed:	59.5 m.p.h.
On time percentage:	98.23 per cent

Statistics

September 19, 1937, to May 31, 1939

Total train miles:	327,360
Total passengers handled:	52,530
Total passenger miles:	13,806,484
Average passengers per train:	42
Revenue per train mile:	\$1.20





The Daylights

(2 trains)

Southern Pacific

Weight of train:	Locomotive	754,000 lb.
	Cars	1,352,000 lb.
	Total	2,106,000 lb.
Consist:	14 cars — 1 baggage-coach; 8 coaches; 1 tavern; 1 coffee shop diner; 1 diner; 1 parlor; 1 parlor-observation.	
Placed in service:	March 21, 1937	
Operated between:	San Francisco and Los Angeles (Each train one way daily)	
Daily mileage per train:	470	
Overall scheduled speed:	48.2 m.p.h.	
On time percentage:	94.8 per cent	

Statistics

March 21, 1937, to June 30, 1939

Total train miles:	781,141
Total passengers handled:	639,394
Total passenger miles:	268,645,662
Average passengers per train:	344
Revenue per train mile:	\$4.92

City of Salina

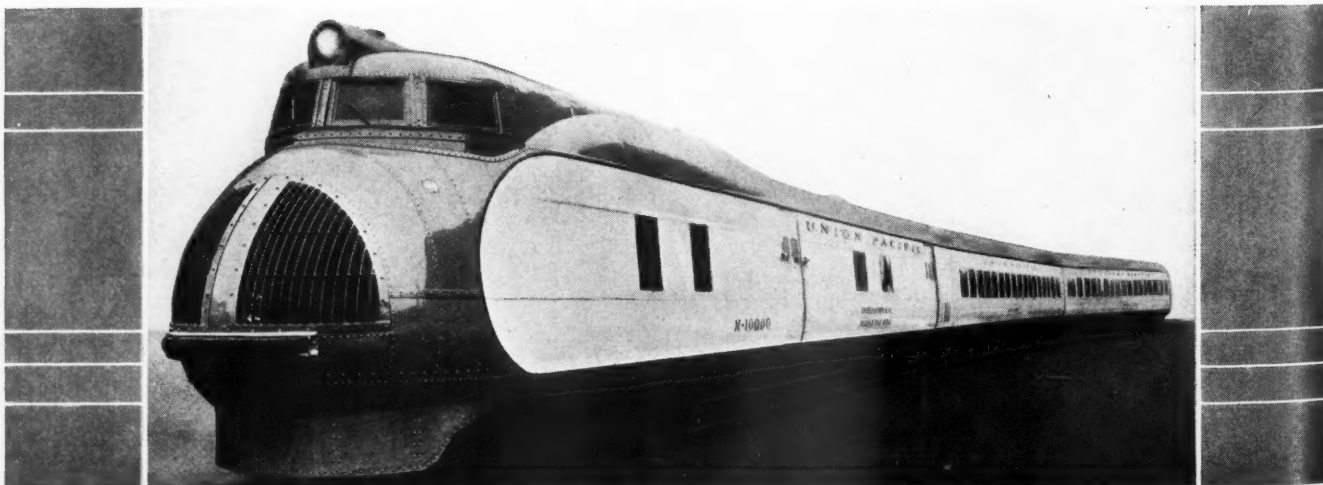
Union Pacific

Weight of train:	247,660 lb.
Consist:	3 cars — 1 power-baggage; 1 coach; 1 coach-buffet
Placed in service:	January 31, 1935
Operated between:	Salina, Kan., to Kansas City, Mo. Kansas City, Mo., to Topeka, Kan., and return Kansas City to Salina
Daily mileage:	560
Overall scheduled speed:	Salina-Kansas City: 53.4 m.p.h. Kansas City-Topeka: 60 m.p.h.
On time percentage:	99.4 per cent

Statistics

January 31, 1935, to July 1, 1939

Total train miles:	653,832
Total passengers handled:	414,997
Total passenger miles:	32,097,304
Average passengers per train:	49
Revenue per train mile:	78.6 cents





↑
City of Denver
(2 trains)

Union Pacific
(Chicago & North Western)

Weight of trains: 1,348,345 lb.
1,341,140 lb

Consist of each train: 13 cars—2 power units; 1 auxiliary-baggage; 1 baggage-mail; 1 baggage-laproom; 2 coaches; 1 diner; 2 sleeping cars; 1 berth-bedroom - compartment car; 1 bedroom-compartment-observation car; 1 drawing room-compartment-bedroom-roomette car added to each train May 11 and 12, 1939.

Placed in service: June 18, 1936

Operated between: Chicago and Denver
(One trip in each direction daily)

Daily mileage per train: 1,048

Overall scheduled speed: 65.4 m.p.h.

On time percentage: 96.4 per cent

Statistics

June 18, 1936, to July 1, 1939

Total train miles:	2,329,522
Total passengers handled:	U. P.: 256,973 C. & N. W.: 281,642
Total passenger miles:	214,937,265
Average passengers per train:	92
Revenue per train mile:	\$2.19

City of San Francisco.

Union Pacific
(Chicago & North Western)
(Southern Pacific)

Weight of train: 2,545,496 lb.

Consist: 17 cars—3 power units; 1 auxiliary-baggage-dormitory; 1 chair car; 1 diner-kitchen; 1 diner; 1 dormitory-club; 3 sleepers; 2 drawing room-compartment cars; 2 bedroom cars; 1 roomette car; 1 observation lounge.

Placed in service: June 14, 1936

Operated between: Chicago and San Francisco
(5 round trips per month)

Mileage: 22,600 miles per month

Overall scheduled speed: 56.8 m.p.h.

On time percentage: 95.3 per cent

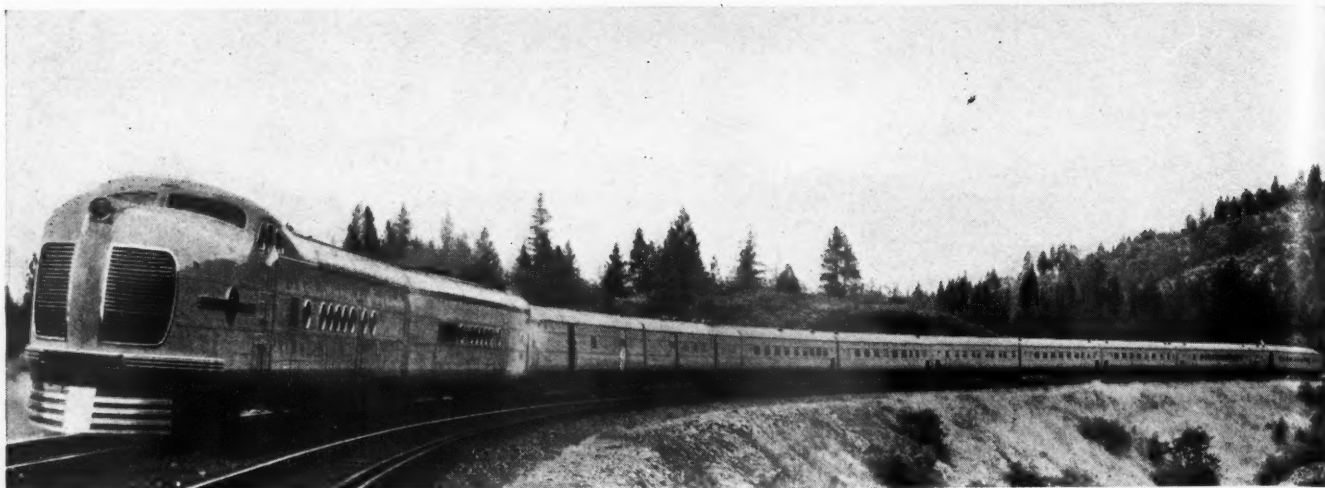
Statistics

June 14, 1936, to July 1, 1939

Total train miles:	828,058
Total passengers handled:	C. & N. W.: 46,886 U. P.: 49,025 S. P.: 51,109
Total passenger miles:	109,182,012
Average passengers per train:	132
Revenue per train mile:	\$3.72

Remarks: This schedule originally protected by a 11-car train, which was superseded on January 2, 1938, by a 17-car train.





↑
City of Portland
 Union Pacific
 (Chicago & North Western)

Weight of present train: 1,064,300 lb.

Consist: 11 cars—2 power units; 1 auxiliary-baggage; 1 baggage-dormitory-kitchen; 3 sleeping cars; 1 bedroom-compartment car; 1 coach; 1 coach-buffet; 1 diner-lounge.

Placed in service: Original 7-car train, weight 597,280 lb., in operation June 6, 1935, to July 26, 1935. Operation renewed February 6, 1936, to March 27, 1939, when present 11-car train took over service.

Operated between: Chicago and Portland, Ore. (Five round trips per month)

Mileage: 22,720 miles per month

Overall scheduled speed: 57.4 m.p.h.

On time percentage: 96.2 per cent

Statistics

June 6, 1935, to July 1, 1939

Total train miles:	899,798
Total passengers handled:	U. P.: 35,929 C. & N. W.: 29,898
Total passenger miles:	69,688,047
Average passengers per train:	77
Revenue per train mile:	\$1.42

City of Los Angeles

(13-car train)
 Union Pacific
 (Chicago & North Western)

Weight of train: 1,500,240 lb.

Consist: 2 power units; 1 auxiliary baggage-dormitory car; 2 coaches; 1 diner-kitchen; 1 diner; 3 sleeping cars; 2 bedroom-compartment cars; 1 observation lounge.

Placed in service: May 15, 1936

Operated between: Chicago and Los Angeles (5 round trips per month)

Mileage: 22,995 miles per month

Overall scheduled speed: 59 m.p.h.

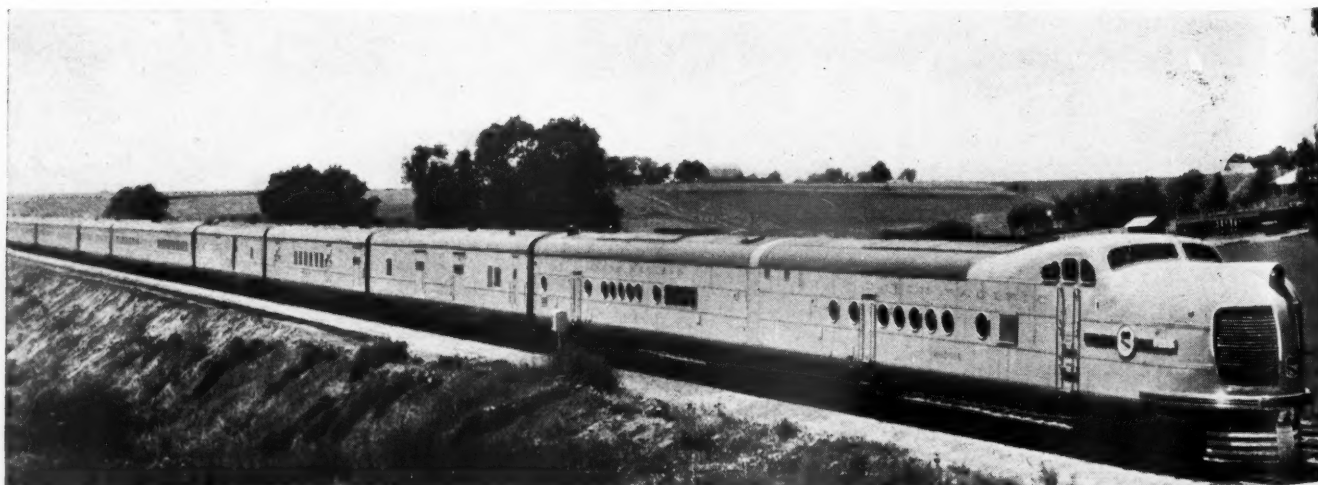
On time percentage: 93.5 per cent

Statistics

May 15, 1936, to July 1, 1939

Total train miles:	824,381
Total passengers handled:	U. P.: 44,199 C. & N. W.: 36,778
Total passenger miles:	90,148,560
Average passengers per train:	109
Revenue per train mile:	\$2.51

Remarks: This train, originally 11 cars, began operations May 15, 1936 and was replaced by a new 17-car train on December 27, 1937. The original train was then remodeled, the consist increased to 13 cars, and put back in service on August 18, 1938.





City of Los Angeles

(17-car train)

Union Pacific

(Chicago and North Western)

Weight of train:	2,512,264 lb.
Consist:	3 power units; 1 auxiliary-baggage-dormitory car; 2 chair cars; 1 diner-kitchen; 1 diner; 1 dormitory-club car; 2 sleeping cars; 2 drawing room-compartment cars; 1 roomette car; 2 bedroom cars; 1 observation lounge.
Placed in service:	December 27, 1937
Operated between:	Chicago and Los Angeles (5 round trips per month)
Mileage:	22,995 miles per month
Overall scheduled speed:	59 m.p.h.
On time percentage:	93.5 per cent

Statistics

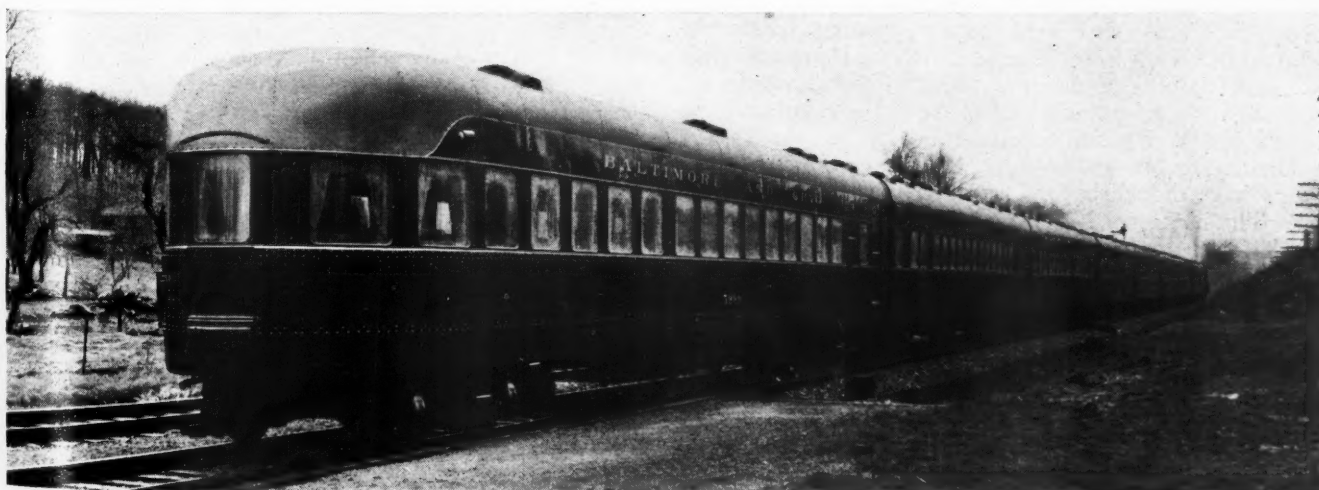
December 27, 1937, to July 1, 1939

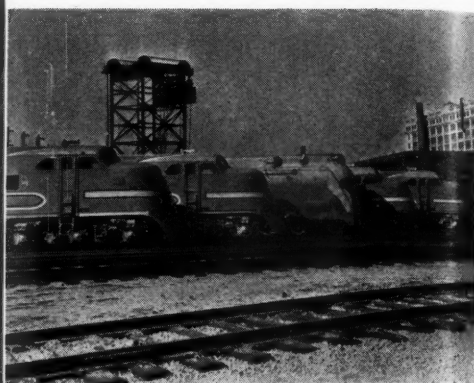
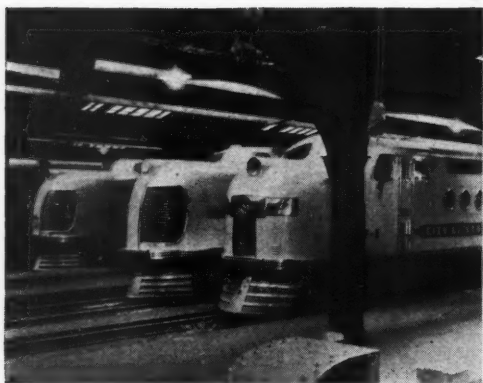
Total train miles:	420,962
Total passengers handled:	U. P.: 28,562 C. & N. W.: 22,804
Total passenger miles:	56,846,110
Average passengers per train:	135
Revenue per train mile:	\$3.30

Explanatory Notes

The foregoing statistics with reference to new, lightweight trains include only such figures as are directly applicable to these trains, and do not include figures for the operation of supplementary trains of standard equipment.

Overall scheduled speed:	Includes all stops between initial and final termini.
On time percentage:	In computing these figures, the customary five-minute time allowance is considered.
Total passengers handled:	These figures, in each case, include only revenue passengers.
Revenue per train mile:	These figures include only revenue from passenger fares paid, and do not include mail, express or other head-end revenue, nor revenue from dining car service, taverns, cocktail lounges, etc.





Whatever the Surroundings—Streamliners Still Provide a Thrill

"Speed Limit — Ninety Miles!"

New fast trains are operated with safety and a high on-time percentage

"SPEED LIMIT 90."

This sign on a curve in western Nebraska five years ago for a special run gave some hint as to how operations were to be revised to take care of the new era in railroad speeds. Subsequently up to July 1 new, lightweight passenger trains, operated as a unit, had piled up 28,317,174 train miles, with an on-time performance of better than 90 per cent, figured on a five-minute allowance. These trains, whose total daily mileage is now approximately 45,000, have accomplished this feat in all sorts of weather and under all sorts of topographical conditions. Moreover, in spite of one unfortunate accident caused by sabotage, their safety record has been extraordinary.

Records such as that made by the City of Denver (two trains), which in three years operated 1,147,029 miles without visiting a shop, are being established constantly, and such trains as the Hiawathas, the Daylights and others have similar records to their credit. The Pioneer Zephyr, then a three-car train, although designed entirely for high-speed local service, proved its mettle when called upon to serve as an Advance Denver Zephyr for some months in the summer of 1935. It made the run of over a thousand miles at high speed daily with a record of 158 times on-time in 161 trips.

Under the test of severe operating conditions, these trains have proved beyond question that they can "take it." The high speed of which they are capable is taken much for granted now, but in the early days of their development their speed trials made the headlines. What is now practically normal safe speed for long distances, in view of better track and greater knowledge and experience of what the trains can do, then required weeks of preparation and extreme care.

The new trains operated more than 25 million miles at speeds averaging approximately 60 m. p. h. overall without a single passenger fatality. Then, on August 12, 1939, a homicidal maniac succeeded in derailling the

City of San Francisco on Southern Pacific rails near Harney, Nev., resulting in the death of 9 passengers, 14 members of the crew, and injuries to 119 persons. The official Interstate Commerce Commission report on this accident has not yet been released. It seems apparent, however, that, under the circumstances, the equipment stood up remarkably under the stress and strain to which it was subjected. Reports of this accident appeared in the *Railway Age* of August 19, page 289; September 2, page 350; and September 23, page 444. The immediate announcement of the president of the Union Pacific that another train would be purchased in its place is indicative of his confidence in this type of equipment.

The new trains have been involved in several grade crossing accidents, frequently at high speeds. Although in one case the other vehicle involved was a huge road grader, no damage other than minor dents has occurred to the trains in such accidents. On one occasion the Mark Twain Zephyr hit and capsized a standard sleeping car in the St. Louis station, with no damage to the streamliner. Other accidents in which these trains have been involved include the following:

- | | |
|-------------------|--|
| November 13, 1934 | Pioneer Zephyr (C. B. & Q.). Struck by 5-ton truck at Greenwood, Nebr. Damage: a broken step and slight dent in car body. Train proceeded on schedule. |
| July 24, 1935 | City of Portland (U. P.). Two sleeping cars were derailed at Nugget, Wyo. No casualties. Train rerailed and proceeded under own power to Pocatello, Idaho. |
| December 14, 1936 | Denver Zephyr (C. B. & Q.). Sidewiped by a D. & R. G. W. train in the Denver passenger station. Five cars derailed; no casualties. Train proceeded on regular run without four cars, which were repaired and returned to service in 10 days. |
| February 8, 1937 | City of Denver (U. P.). Derailed by broken axle near Orchard, Colo. No cas- |

ualties. Train rerailed and continued to Denver.

October 2, 1939

Pioneer Zephyr (C. B. & Q.). Ran through an open switch at Napier, Mo., and collided head-on with freight locomotive. Engineman killed, two members of crew and four passengers injured. Power car damaged.

The new trains have proved their ability to stand up in their regular high-speed service, as well as to protect passengers on the rare occasions when an accident occurs.

How They Run

Operating men have found that high-speed operation differs only in certain points from ordinary passenger train operation. It is axiomatic that a high-speed train must be dispatched with greater precision than one operating at lower speeds. On most roads the rules require freight trains to clear the time of passenger trains by at least five minutes. In general, this clearance has been practically doubled for high-speed trains; yet the delay to freight trains is by no means proportionately increased, since the high-speed trains traverse a division faster, and meet fewer trains.

The adverse affect on high speeds of repeated acceleration and deceleration is such that constant speeds should be striven for, and slow orders and other speed restrictions eliminated wherever possible. It has been demonstrated that 90 m. p. h. is a perfectly safe speed for certain curves with proper superelevation and spirals. However, speed boards should be prominently displayed about 3,000 ft. from the point of the curve, and profiles of the territory should be available at terminals for the information of the enginemen. Notifying crews of track imperfections requiring slow running assumes an added importance under high-speed operation, and on most roads the distance between such track and the point of warning has been increased.

To schedule a high-speed train correctly also involves extra care. When the average speed is 60 m. p. h. or more, delays that were formerly regarded as part of the day's work can no longer be tolerated. The relocation of water and fuel stations and larger standpipes at water stations have helped steam train operation, and the reduction or elimination of head-end delays at intermediate stations through handling mail and express has helped all the trains.

Following is a resume of some of the outstanding special runs that have been made with the new trains. The



High Ball!

data obtained on these runs, after careful checking and correlation, have been used as a basis for all of the high-speed schedules:

May 10, 1934

The Pioneer Zephyr (C. B. & Q.) averaged 80.2 m.p.h. in a trial run on the Pennsylvania from Fort Wayne, Ind., to Englewood, Ill., 141 miles, against a strong headwind.

May 26, 1934

The Pioneer Zephyr (C. B. & Q.) started from the Rocky Mountains at dawn and pulled onto the stage at the World's Fair in Chicago the same evening. This non-stop run of 1,015 miles was made in 13 hr. 5 min., at an average speed of 77.5 m.p.h. The maximum speed attained was 112.5 m.p.h., and a 19-mile stretch was traversed at 106.2 m.p.h.

July 20, 1934

In preparation for the eventual high-speed streamlined runs of the Hiawathas, a standard train on the Chicago, Milwaukee, St. Paul & Pacific, ran from Chicago to Milwaukee, 85 miles, in 67.5 min., at an average speed of 75.5 m.p.h., having averaged 103 m.p.h. for a five-mile stretch.

July 30, 1934

The Pioneer Zephyr (C. B. & Q.) ran from Chicago to St. Paul, 431 miles, in 6 hr. 4 min., including six stops, as a trial run on which to base the proposed 6 hr. 30 min. regular schedule.

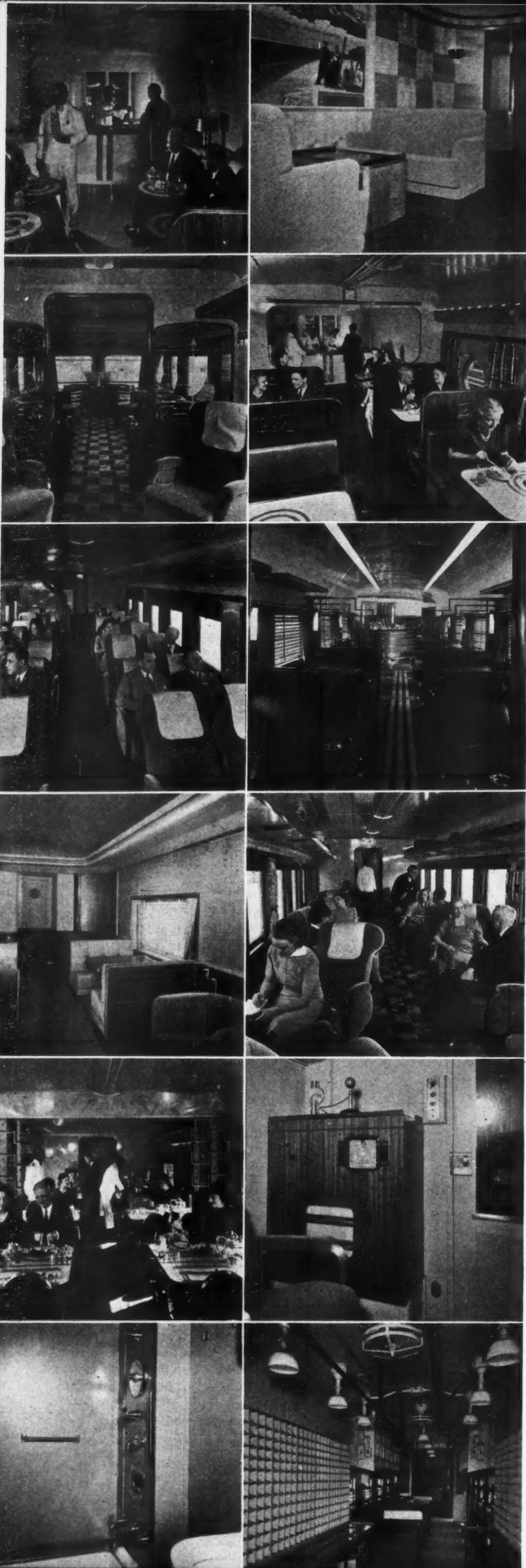
October 22, 1934

The City of Portland (U. P.), the first streamlined sleeping car train, ran from Los Angeles to New York, 3,258 miles, in 56 hr. 55 min., or at 57.2 m.p.h. The Los Angeles-Chicago run of 2,298 miles was made in 38 hr. 47 min., or at 59.2 m.p.h.—breaking all previous speed records between those points.

(Continued on page 593)



Start of one of the High Speed Record Runs



Ten Million Patron

Brilliant sales campaigns featuring
generally increase

IT'S a far cry from the Grand Central terminal in New York to the "depot" in Smith Center, Kan.; but the new trains have proved that prospective passengers are akin in both places. Sixty thousand people trooped through one of the new trains at Grand Central in one day, while Smith Center could muster only 1,157 for a similar exhibition. However, as the total population of Smith Center is only 1,736, the enthusiasm of the Kansas prairies compared favorably with that of the metropolitan area. It is this universal appeal, carefully fostered by the railways, that has induced over ten million passengers to ride these new trains since the first one entered revenue service late in 1934. Of what does this appeal consist? Basically, in good showmanship and salesmanship of a saleable article.

Give 'Em Color and Comfort

Until the advent of the new trains passenger equipment was designed by engineers, who turned out a thorough, workmanlike job, in colors that would not show the dirt—equipment that was strictly utilitarian in character. It took the railways a long time to realize that they were dealing, in a highly competitive market, with a style-conscious public, which was accustomed to color in transportation through the styling efforts of the automobile industry. The tentative early efforts toward improving the appearance and appeal of trains met with such approval that the developments in the last five years followed in natural progression.

There is no other vehicle of transportation that can be made as comfortable and commodious as the railway train. By turning over the design of the interior architectural features and the decorative treatment of the new trains to artists and interior decorators, the railways soon achieved trains that for commodious comfort and attractiveness excelled any other form of transportation. Thousands of questionnaires passed out to passengers on the new trains have shown how keenly appreciative and aware the traveling public is of such comforts and conveniences as air conditioning; lighting systems that combine beauty with greater visibility; modern furniture, drapery and carpeting; train telephone service; radios; and the thousand and one other comforts and conveniences that characterize the new trains.

Speed—and Still More Speed

In addition to being style-conscious, the traveling public is also speed-conscious—a natural result of an age

Attractive Interiors with All Modern Comforts
Passenger Service

trons Can't Be Wrong

ns feature success of new trains and
ease passenger traffic

that has seen the inception and the evolution of the air-
plane and the high-powered automobile. To meet this
competition, while the designers were busy with their
revolutionary treatment of train interiors, engineers were
equally busy working out structural problems that would
meet the demand for speed and still more speed.

The technical details of how all this was worked out
are given elsewhere in this issue. From a traffic stand-
point it is only necessary to know that they were worked
out successfully, and it soon became possible to schedule
trains at speeds that would have been considered idle
dreams less than a decade ago. Hour upon hour was
clipped off schedules that were already considered fast,
and this was not only true of the new trains, but of
passenger schedules in general throughout the country.

A Fine Product—What of It?

Here then was the spectacle of a superfine product—
the modern passenger train—a monument to the skill
and ingenuity of the railways and the railway supply
manufacturers in research and engineering—but what of
it? Traditionally, railroading had been conducted as a
sort of secret, mysterious business. Some effort, but
little progress, had been made in acquainting the public
with what was going on behind the scenes. There were
so many other matters of absorbing interest in this
modern, fast-moving world that interest in railways
seemed dormant—if not dead. The spectacle of bare-
foot boys thronging beside the tracks to watch No. 69
roar by, or of everyone in town going down to the
“depot” to meet No. 24, seemed as out-of-date as the
buggy-whip. But it wasn't—and the railways set about
proving that it wasn't.

Sales and promotion ideas may have been lacking
previously, but they came rushing now. Exhibitions of
the new trains, well-publicized and advertised, began
attracting a few curious sightseers in the first day or
two. Then the word spread, and ropes and police be-
came necessary to hold the crowds back. Meanwhile, a
well-planned publicity campaign was in full operation.
Pictures of the new trains began appearing in news-
papers, rotogravure sections, magazines and news reels
throughout the country, and the exhibitions took on the
nature of triumphal tours.

Special fast runs attended by elaborate ceremonies, and
broadcast on nation-wide hook-ups, made the front pages
of all newspapers. Governors, movie actresses and all
sorts of other dignitaries and celebrities were glad to
serve in christening the trains or starting new runs.
Fashion shows were held on board, and pictures of the

Convenience and Luxuries Have Brought
the New Trains



interior decorations, the attractiveness of which was enhanced by beautiful models and the charming stewardesses in service on many of the trains, appeared throughout the press, including women's magazines. A procession of trains, headed by a glistening streamliner, opened a new line in the Rockies, and everywhere the trains went people lined the right-of-way. The words "streamliner" and "streamlined" became an integral part of the American language overnight. The trains that began to be turned out of the builders' shops, after the first ones, all cashed in on this wave of reawakened enthusiasm for railroads. Train-naming contests were held, and exhibitions of the latest "models" were marked by an undiminished number of eager spectators. The unflagging interest is perhaps best typified by the fact that, only a week or two ago, a leading metropolitan newspaper carried a feature article, with photographs, describing the crowds that still gather nightly to watch the streamliners go by.

A Grand Selling Job

The appeal of the colorful new trains and their sleek steam or Diesel-electric locomotives did not cease at mere curiosity. When they were placed in revenue service, the patronage fully justified the splendid selling and publicity job that had been done. In fact, on many of the trains, it was as difficult to get a seat as to procure a ticket for a world series game in Cincinnati. The direct appeal of the streamliner is indicated beyond any question by many instances, of which the experience with the Pioneer Zephyr is typical. In order that it might serve as an Advance Denver Zephyr for a few months while the new trains for the Denver service were being built, it was removed from its regular Lincoln-Omaha-Kansas City run. A steam train of conventional design, running on the same fast schedule, was substituted for the Pioneer—and traffic dropped 30 per cent!

Many interesting sidelights have developed in connection with the new trains. One of the most important, perhaps, is the effect on the crews. The spirit of enthusiasm, almost of adventure, that characterizes passengers on the fast trains has communicated itself to the crews. They, too, cannot help but join in the enthusiasm, and there is a marked sprightliness and helpful, friendly spirit shown by the crews of the streamliners which, unfortunately, is not always present on other trains. This spirit is evident from the conductor down to the third assistant chef in the diner. It is also evident in both the station and city ticket offices, where the passenger is made to feel that buying a ticket for a streamliner is an event and not merely a prosaic business transaction.

Many of the ticket offices have been "streamlined" as well, and are now bright, attractive, air-conditioned offices that match the spirit of the new era in railroad passenger transportation. Even the timetables have been "streamlined." The old prosaic booklets, with all the uninteresting appearance of a telephone directory, have been superseded by brightly colored booklets, usually illustrated, that perform a necessary selling job in their own way.

The railways have not "missed the boat" with regard to the byproducts of this re-awakened railroad interest. They have cashed in on ski trains, camera trains, kayak trains, swing music trains, and a wide variety of other revenue producers. Meanwhile, railroad enthusiast trips have grown from two or three-hour jaunts to 6,000-mile tours.

On all the trains questionnaires have been issued inquiring as to what form of transportation the "stream-

liner" passenger would have used if such a train had not been available.

Where Traffic Comes From

The answers received have revealed a heartening situation with reference to the number of people who would not otherwise have made the trip at all. This creation of a new travel market has been one of the major sales successes of passenger progress in the past five years. A large percentage of passengers would have driven their private automobiles and a sizeable percentage would have used competing forms of transportation other than railroads.

It is significant to observe that later questionnaires reveal that the number of passengers who would have used other trains of the same or competing railroads is definitely decreasing. The original streamline trains were intended for relatively short day runs, largely to meet bus competition, and they still serve that purpose. As more and bigger trains were built and longer runs were possible, the day trains began having an effect on night travel. At one period the day and night traffic between Chicago and St. Paul-Minneapolis showed an exact reversal of previous travel habits, approximately 70 per cent of the passengers using day trains and 30 per cent night trains, instead of almost the exact opposite, prior to the inauguration of the new trains. The loss of traffic by the night trains, however, was not as great as first glance at these figures would indicate, since much of the day travel was new business.

The inauguration of the long-distance sleeping car trains, however, and the improvement in sleeping car accommodations, which has kept in the forefront of passenger progress, have produced much additional revenue. In the final analysis return on investment is the factor of most interest in inaugurating new trains, and this figure, when analyzed, shows that each type of the new trains has a definite place in the present-day traffic picture.

We'll Have to Use More Cars

A striking illustration of the success of the new trains, and a convincing proof of their traffic-building value, is afforded by the additions to the trains that have been made since their inception. Practically all of the trains that have been in service for as long as two years are now handling additional cars. The Hiawatha, which started out as a six-car train, now has an average consist of over 12 cars. The City of Los Angeles and the City of San Francisco were both formerly 11-car trains, but now carry 17 cars. The City of Denver and the Denver Zephyr trains have each added two additional sleepers to their consist. The El Capitans added a diner and two coaches early this summer. The original Twin Zephyrs were not only replaced by much larger trains, but were placed on a double daily service. The Southern Pacific has two new Daylights on order to take care of travel demands, and the Seaboard has ordered a companion train to its Silver Meteor. Only three days after the new two-car Southern streamliners went into operation last month it was found necessary to add another car.

The results of the individual trains are given in the statistical section of this issue. Individually they show surprising money-making possibilities. In the aggregate the total of ten million passengers handled, yielding approximately *2½ billion passenger-miles*, gives a striking—almost breathtaking—proof of the successful effort of the railways to promote passenger progress in the last five years.

Light Weight Captures the Field

Starting with streamline trains, the new construction materials take over all types of passenger equipment

FOR many years 60 miles an hour was accepted as a good passenger-train cruising speed, and 40 to 50 miles an hour was the common range for over-the-division scheduled speeds. Faster schedules meant faster cruising speeds or more rapid acceleration. Faster running or quicker acceleration required more locomotive horsepower. But the size and weight of passenger trains was being stepped up faster than the power of steam passenger locomotives.

Conventional passenger coaches for main-line service ranged in weight from about 65 to 80 tons*; a few exceptionally light designs weighed as little as 60 tons. Sleeping cars ranged well up toward 90 tons. Trains of 1,000 to 1,200 tons were being handled regularly on some of the best schedules in the country with locomotives developing from 3,000 to 4,000 indicated horsepower—from 2.5 to 2.75 hp. per ton of locomotive and train weight. The locomotive accounted for 20 to 25 per cent of the combined weight. When new, many of these locomotives furnished 3 to 3.5 hp. per ton of combined weight of the trains they were built to handle.

Less Weight vs. More Horsepower

The idea that less weight and reduced resistance might be as effective as increased locomotive horsepower in making faster schedules possible was first put to the practical test when, during the first half of 1933, the Union Pacific and the Chicago, Burlington & Quincy each announced its plans for a lightweight streamline articulated passenger train to be propelled by a built-in internal-combustion power plant. The first of these trains was completed on or about February 1, 1934. This was the Union Pacific train, now known as the City of Salina. It consists of three body units carried on four four-wheel trucks. It was built by the Pullman Car & Manufacturing Company and aluminum alloy was the principal structural material. Some two months later the Burlington train—the first of the Zephyrs—was completed. This is also made up of three articulated units, but was built by the Edward G. Budd Manufacturing Company of stainless steel, joined by the Shotweld process of controlled-energy welding.

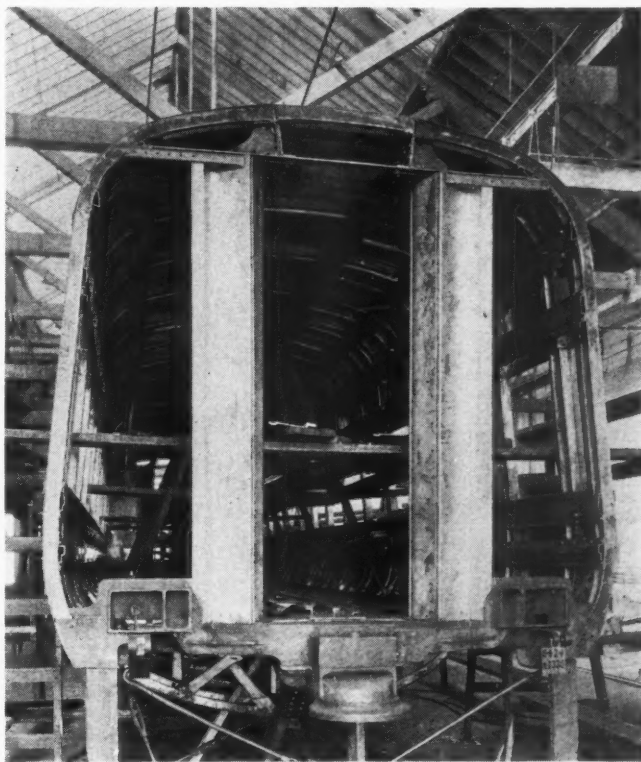
Both of these trains reflected extreme efforts to reduce weight and train resistance so that a single 600-hp. engine-generator unit might be able to move the train at running speeds up to approximately 100 miles an hour. In the main, the weight saving was effected by utilizing the special properties of the materials of construction: the low weight-volume relationship of the aluminum alloys; the high strength and freedom from corrosion of the stainless steel. A further gain was made by articulation, thus reducing the number of trucks from six to four. Train resistance at high speeds was kept down by streamlining, by lowering the car bodies, and by reducing their width and height. The reduced size was also a factor in keeping down the

weight. Streamlining consisted in smoothing up all exterior surfaces, even to enclosing the space below the car floors as far as truck clearances would permit, and so shaping the head and rear ends as to reduce turbulence at the points where changes in the direction of air flow take place. Flexible diaphragms conforming to the outside contour of the cars enclosed the space between body units.

The two power plants of like nominal capacity were dissimilar. That on the Union Pacific train is a distillate-burning spark-ignition engine, while that in the Burlington train is a Diesel engine, the prototype of all the two-cycle engines since installed in motor trains or Diesel-electric locomotives by the Electro-Motive Corporation.

New Type Material Introduced

About a year after the Union Pacific and the Burlington trains were built, two lightweight motor trains operated by Diesel-electric power plants were delivered to the Gulf, Mobile & Northern by the American Car and Foundry Company. These trains represent the entry of a new type of structural material into the field of lightweight design: corrosion-resistant low-alloy high-tensile steel, fabricated by welding. They were non-articulated, thus providing the flexibility of consist required in the operation of this railroad's main-



Aluminum Becomes a Structural Material

* This covers cars 70 ft. or more in length. There are shorter cars up to 63 ft. in length, weighing from 52 to 56 tons.



Fabricating Stainless Steel

line passenger service. These trains, consisting of three and four cars, have Alco 660-hp. Diesel engines. Unlike the Union Pacific and Burlington trains, the Rebel trains were not intended for high-speed service, but were adapted to replace steam trains on existing schedules.

The Union Pacific and Burlington trains demonstrated their ability to attain top speeds of at least 90 miles an hour. They demonstrated that high running speeds and fast schedules are not a matter of the capacity of motive power alone, but of the horsepower-weight relationship. The horsepower in these trains, compared with that of even small steam passenger locomotives, is extremely low. And yet it represented about 5 hp. per ton of total weight, and the weight of the power plant and its share of the leading car body amounted to nearly half the total weight of the train. In short, the attractiveness of faster schedules was demonstrated and it was clear that weight reduction was an important factor in making them practicable.

It soon became evident that certain features of the train by which weight had been saved would have to give way. In the later and larger trains for the Union Pacific and Burlington alike, there was a return to the full-size conventional cross-sectional dimensions. Articulation has been retained although only partly, and is being used to a limited extent in such groups as kitchen-dining room combinations, and a few sleeping cars for operation in trains with conventional equipment.

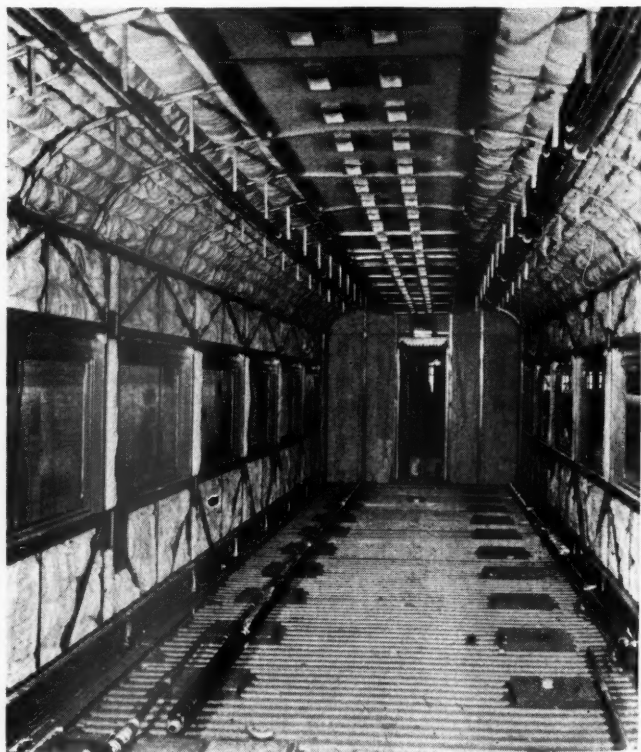
With the increase in size of trains, the built-in Diesel-electric power plant soon gave way to the full Diesel-electric locomotive, first in a single cab unit and then successively in two and three-cab units with horsepower capacities up to 6,000. The City of San Francisco and the City of Los Angeles of the Union Pacific, Chicago & North Western and Southern Pacific, each originally consisting of 14 partially articulated body units and a

three-unit locomotive, have a horsepower capacity of about 4.5 per ton, and the motive power represents about 36 per cent of the total combined weight.

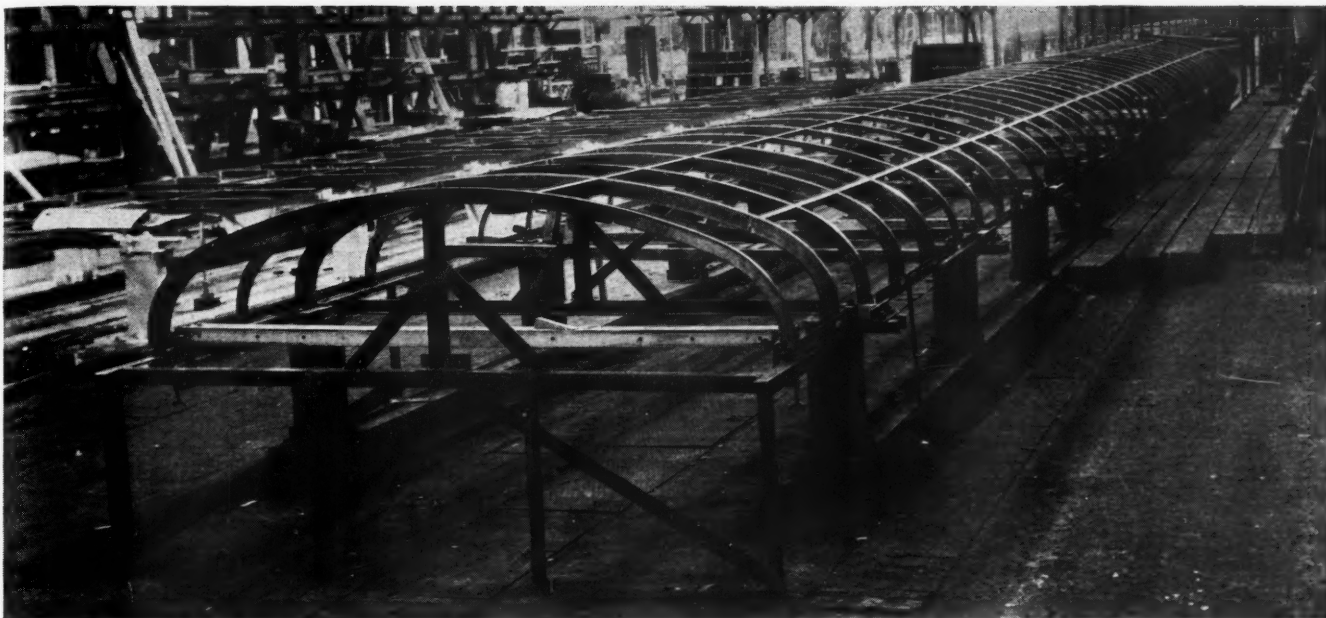
Coaches As Well As Trains

But reduced weight, its value once demonstrated, has not been confined to rolling stock designed for operation in fixed train units; it has very rapidly extended to rolling stock of the car-unit variety. From such completely interchangeable car units have been made up some of the most successful lightweight trains operating on high-speed schedules, and large numbers of them are finding their way into the common run of main-line trains, where they are operating interchangeably with the older conventional cars. Notable among the trains which are now always made up completely of lightweight, interchangeable units are the Hiawathas of the Chicago, Milwaukee, St. Paul & Pacific and the Southern Pacific Daylight trains, the Twentieth Century Limited of the New York Central and the Broadway Limited of the Pennsylvania. The Super Chief of the Santa Fe was the forerunner of a completely re-equipped fleet of trains, only part of which are operating on the higher speed schedules. One of the largest fleet of lightweight coaches—that of the New Haven—is utilized entirely in its regular fleet of main-line trains.

With the inauguration of lightweight trains made up of cars designed to interchange with conventional rolling stock, the streamline steam locomotive made its appearance. Since the success of the Diesel-driven lightweight trains in maintaining high-speed schedules depends upon the provision of a sufficiently high horsepower-weight ratio, the successful operation of such schedules with steam presented no inherent difficulties. Well known, but not too widely applied refinements in design are desirable to adapt the steam locomotive to regular operation at cruising speeds approaching 100 miles an hour. The use of lightweight reciprocating parts has proved



A Welded Truss Car Structure of High-Tensile Alloy Steel



A Welded Roof Structure of High-Tensile Alloy Steel Ready for the Sheathing

particularly important and care is needed in the distribution of overbalance weights. Steam distribution at high speeds is another problem to which attention is being given.

Steam Goes Streamline

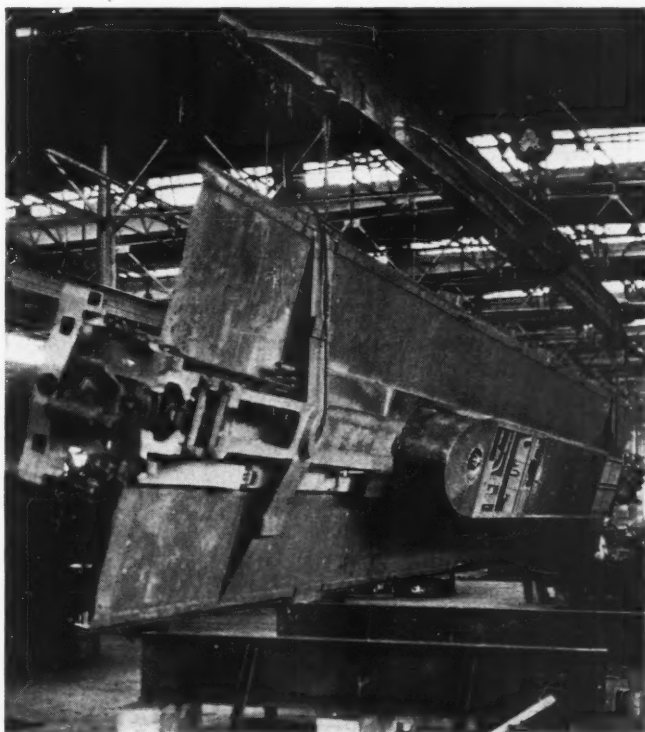
Several high-speed schedules of 60 and more miles an hour are being successfully operated exclusively by steam—notably the Hiawatha runs of the Chicago, Milwaukee, St. Paul & Pacific and the Twentieth Century Limited of the New York Central. The latter train with a consist of 13 cars, including light-weight Pullmans, head-end cars, and dining cars, is hauled by a steam locomotive developing a maximum indicated horsepower of 4,700. The welded low-alloy high-tensile-steel Pullman cars, ranging in weight from 57 to 63 tons, represent a reduction of about one-third of the weight of former conventional construction. The horsepower-weight ratio is about 3.9 or 4 hp. per ton. A similar train of the former cars, hauled by the same locomotive, would have about 3 hp. per ton.

The history of the Hiawatha trains is illustrative of the treatment always accorded the steam locomotive. Inaugurated as a six-car train, it was hauled by a streamline 4-4-2 locomotive designed for the service. The regular load was soon increased to seven cars and then to eight cars and the same locomotive continued to handle the train. With larger locomotives, the train has now grown to a regular consist of nine cars. The value of the coach-unit consist is well indicated by the fact that this train at times operates with as many as 14 coaches.

With the reduction in weight of car structure, there has also been a reduction in truck weights. This has been effected by utilizing high-tensile alloy-steel castings. The use of aluminum and light sections of stainless steel in furniture and fittings has also contributed by reducing the weight of car seats and furniture.

The extent to which the new structural materials have been employed to reduce the weight of passenger equipment is shown in the table.

Streamlining was a spectacular feature of the early, light-weight high-speed trains. At the outset it was discussed in terms of its value as a reducer of train resistance at high speeds. Not only has it continued to be a feature of all the highspeed trains, but it has been applied in the design of a large number of the cars built for general service. Streamlining may be considered as performing three functions. Two of them are reducing head-end and rear-end turbulence and reducing the break-up of smooth air flow along the longitudinal surfaces of the



Under Body Equipment Smoothly Enclosed under the Center of the Car

train by local eddies around windows and between cars. On short trains the so-called head-end effect constitutes a large proportion of the total air resistance. As the length of the train increases, the resistance to the flow of the air along the roofs, sides and underneath the train account for a progressively increasing proportion of total air resistance, and air resistance as a whole in turn becomes a progressively decreasing proportion of the total train resistance. For long trains, therefore, the greatest practical value of streamlining lies in smooth sides, roofs, and under bodies, and in unbroken contours between cars. The third function of streamlining is to restore glamor to the rails. Head-end streamlining continues to be applied to locomotives because of its style value.

A large proportion of the light-weight coaches, whether or not they are intended for operation in high-speed trains of fixed consist, have been streamlined. Windows are set flush against the sheathing, which is free from rivet heads or laps; roofs have lost the clerestory and are free from projecting ventilators, and the hoods have been replaced with straight roofs at the ends. Little attention has been paid to the underbody, although an exception must be made to this statement in the case of Chicago, Milwaukee, St. Paul & Pacific coaches. All underbody equipment is smoothly enclosed in a housing under the center of these cars.

The Braking Problem

With a change from 60 miles an hour to 100 miles an hour as the operating speeds from which stops must be made, there arose a new braking problem. To stop a train from 100 miles an hour requires the dissipation of nearly three times the quantity of energy per ton of train weight that must be dissipated in stopping from a speed of 60 miles an hour. Where safety requires that the minimum stopping distance from the higher speed be the same as that allowed for the lower speed, the average rate of energy dissipation must also be three times as great. This requires the development of higher retardation ratios, much higher brake-shoe pressures and results in much higher brake-shoe and wheel temperatures. There are limits beyond which brake-shoe pressures and retarding ratios cannot safely be increased. To keep unit brake-shoe pressures equivalent to a load on the standard brake shoe of about 18,000 lb., brake-shoe bearing areas have been enlarged either by increasing the size of the brake shoes or by employing double brake heads.

Two measures have been adopted to prevent wheel sliding at high retardation rates. The Decelakron operates to reduce brake-cylinder pressure to maintain a constant safe retardation rate as the coefficient of friction between brake shoe and wheel increases with the reduction in speed. The Decelostat operates on each wheel to reduce brake-cylinder pressure and to sand the rail at the first evidence of incipient wheel sliding. Maximum retardation rates have been employed up to about 3.5 miles per hour per second.

The high-speed control type of air brake first developed for use on the articulated trains has since been adapted for application to individual cars. Aside from its combination of electro-pneumatic, straight-air and automatic-pneumatic control, its relay-valve feature effects uniform brake-cylinder pressure throughout the train irrespective of variations in piston travel.

The severity of the punishment to which wheels are subjected in stopping high-speed trains at high deceleration rates with brake shoes applied on the rim of the wheel has occasioned considerable discussion as to possible substitutes for this method of controlling the speed

of trains. Among the alternatives considered are the magnetic brake, dynamic electric braking, and the application of the disc or drum type brake employed in automotive practice.

The first practical application of a substitute for wheel-rim braking is the disc-type brake in service on the Burlington "General Pershing" Zephyr, on which its early performance is promising. An ingenious application of dynamic braking is embodied in the steam turbo-electric locomotive built for the Union Pacific by the General Electric Company.

Travel Comfort

With the inauguration of the light-weight high-speed trains began an era of refinement in all features affecting comfort and attractiveness. Air-conditioning, while well established prior to the inauguration of the new light-weight trains, has been improved, particularly the features affecting air distribution and temperature control. The unit train was particularly well adapted to the development of the head-end system of auxiliary power generation. By the installation of separate Diesel-electric power plants to meet the increasing demand for auxiliary power, the locomotive power plant is relieved of all but the traction load.

But the installation of separate auxiliary power plants has not been confined to the head end. Self-contained Diesel-electric power plants are being installed on individual cars. In one such installation, the power plant furnished energy for the heating load as well as the light and air-conditioning load.

One of the fields in which the greatest improvements has been effected is that of lighting. Light intensity, long considered unsatisfactory in most railway passenger cars, is being increased and new methods of distribution effected. These involve fluorescent lighting and the use of modern plastics as diffusing and light-decorative mediums, in numerous combinations of direct and indirect lighting.

The entire atmosphere in modern passenger cars has been greatly improved. Careful interior design and ornamentation, and the effective use of color, under the direction of competent experts, has been chiefly responsible for this. The development of the rotating type of seat has greatly facilitated the design of seats and backs for comfort.

Not all the improvements affecting comfort are inside the cars, however. The use of rubber and other material for sound insulation was first tried prior to the construction of lightweight high-speed trains. Since the first of these trains was built, however, the employment of sound-insulating material on new cars has been quite general.

The difficulties which were encountered in the development of truck oscillations at critical speeds, which were corrected in some of the lightweight trains by the adoption of cylindrical-tread wheels, have led to a more intensive study of the riding qualities of passenger trucks. Improvements have been effected by complete changes in truck suspension and by better proportioned springs in trucks of the conventional equalizer type.

In the early articulated trains, slack between cars was completely eliminated and these trains are particularly smooth performers in starting and stopping. The tight-lock coupler has eliminated free-slack from coupler knuckles. The rubber draft gear is also being applied on many cars as a further means of improving the smoothness of acceleration and deceleration of inter-car movements within the train.

Passenger Coaches and Body Units of Articulated Trains in Which the New Structural Materials and New Methods of Fabrication Have Been Used to Reduce Weight

Road	No. cars	Class	Length, ft.-in.	Weight, lb.	Structural material	Year built	Builder
Alabama Great Southern.....	2	Coaches	72- 9	114,700	H. T. steel	1939	St. Louis Car Co.
	2	Motor-bagg.	80- 0	228,200	H. T. steel	1939	St. Louis Car Co.
Atchison, Topeka & Santa Fe.....	1	Coach	79- 8	83,530	Stain. steel	1936	Edw. G. Budd
	1	Coach	79- 2	98,000	H. T. steel	1936	St. Louis Car Co.
	1	Bagg.-mail	73-10				
	1	Bagg.	79-10				
	1	Diner	83- 2	851,000	Stain. steel	1937	Edw. G. Budd
	1	Club	79-10				
	4	Sleepers	79-10				
	1	Sleep.-obs.	79-11				
	47	Coaches	79-10	104,000	Stain. steel	1937-38	Edw. G. Budd
	18	Diners	83- 2	115,500	Stain. steel	1937-38	Edw. G. Budd
	6	Club-bagg.	79-10	104,000	Stain. steel	1937	Edw. G. Budd
	6	Lounge	.....	.....	Stain. steel	1937	Edw. G. Budd
	2	Obs.-chair	80- 0	101,300	Stain. steel	1938	Edw. G. Budd
	2	Chair-club	.....	.....	Stain. steel	1938	Edw. G. Budd
	2	Bagg.-lounge	.....	.....	Stain. steel	1938	Edw. G. Budd
	1	Club-lounge	.....	.....	Stain. steel	1938	Edw. G. Budd
	2	Bagg.-mail	.....	.....	Stain. steel	1938	Edw. G. Budd
	2	Pass.-bagg.-dorm.	79-10	104,900	Stain. steel	1938	Edw. G. Budd
	2	Pass.-bagg.	.....	.....	Stain. steel	1938	Edw. G. Budd
	5	Parlor-obs.	.....	.....	Stain. steel	1938	Edw. G. Budd
	1	Diner	.....	.....	.....	*	Pull.-Std.
	1	Diner-lunch-l'g.	.....	.....	.....	*	Pull.-Std.
	2	Pass.-bagg.	.....	.....	.....	*	Pull.-Std.
	1	Pass.-bagg.-bunk	.....	.....	.....	*	Pull.-Std.
	1	Chair-obs.	.....	.....	.....	*	Pull.-Std.
	1	Club	.....	.....	.....	*	Pull.-Std.
	2	Mail	.....	.....	Stain. steel	*	Edw. G. Budd
	2	Club-chair	.....	.....	Stain. steel	*	Edw. G. Budd
Atlantic Coast Line.....	14				Stain. steel	*	Edw. G. Budd
Baltimore & Ohio.....	1	Diner-l.c.	70- 0	97,300	Alum. alloy	1935	American Car & Fdry.
	1	Mail-bagg.	67-10	76,900	Alum. alloy	1935	American Car & Fdry.
	3	Coach	70- 0	88,600	Alum. alloy	1935	American Car & Fdry.
	2	Chair	70- 0	88,200	Alum. alloy	1935	American Car & Fdry.
	1	Obs.-chair	70- 0	83,250	Alum. alloy	1935	American Car & Fdry.
	1	Diner-l.c.	70- 0	107,500	H. T. steel	1935	American Car & Fdry.
	1	Mail-bagg.	67-10	87,500	H. T. steel	1935	American Car & Fdry.
	3	Pass.	70-10	98,800	H. T. steel	1935	American Car & Fdry.
	2	Chair	70-10	98,400	H. T. steel	1935	American Car & Fdry.
	1	Obs.	70-10	92,700	H. T. steel	1935	American Car & Fdry.
Bangor & Aroostook.....	3	Buffet-coach	84- 8 $\frac{3}{4}$	117,600	H. T. steel	1937	Pull.-Std.
	2	Coaches	84- 8 $\frac{3}{4}$	111,300	H. T. steel	1937	Pull.-Std.
	4	Bagg.-mail	74- 5 $\frac{1}{2}$	96,500	H. T. steel	1937-39	Pull.-Std.
Boston & Maine.....	3†		199- 2 $\frac{3}{4}$ †	213,600†	Stain. steel	1935	Edw. G. Budd
	10	Coaches	84- 1 $\frac{1}{2}$	108,700	H. T. steel	1935	Pull.-Bradley
	21	Coaches	80- 1 $\frac{1}{2}$	89,800	H. T. steel	1935	Pull.-Bradley
	20	Coaches	84- 1 $\frac{1}{2}$	108,700	H. T. steel	1937	Pull.-Std.
Burlington-Rock Island.....	1§	Coach	64- 0	55,335	Stain. steel	1939	Budd
Central of Georgia.....	3	Exp.	74- 3 $\frac{3}{8}$	100,400	H. T. steel	1937	Bethlehem
	5	Coach	84- 2 $\frac{3}{4}$	120,000	H. T. steel	1937	Bethlehem
Chesapeake & Ohio.....	3	Pass.-bagg.	67- 8	.....	Alloy steel	1937	Bethlehem
Chicago & North Western.....	16	Chair	81- 0	113,900	H. T. steel	1937	Pull.-Std.
	7	Chair	81- 0	115,300	H. T. steel	1937	Pull.-Std.
	2	Tap-room-lounge	.....	.....	H. T. steel	1939	Pull.-Std.
	8	Coach	.....	.....	H. T. steel	1939	Pull.-Std.
	2	Diner	.....	.....	H. T. steel	1939	Pull.-Std.
	6	Parlor	.....	.....	H. T. steel	1939	Pull.-Std.
	2	Obs.-club	.....	.....	H. T. steel	1939	Pull.-Std.
Chicago, Burlington & Quincy.....	3†		197- 1 $\frac{3}{4}$ †	218,800†	Stain. steel	1934	Edw. G. Budd
	6†		196- 9 $\frac{7}{8}$ †	225,000†	Stain. steel	1935	Edw. G. Budd
	1§	Coach	.....	44,000	Stain. steel	1935	Edw. G. Budd
	4†		280- 0†	287,000†	Stain. steel	1935	Edw. G. Budd
	2§	Mail-bagg.	76- 3	108,300	Stain. steel	1936	Edw. G. Budd
	4§	Coach	64- 0	58,700	Stain. steel	1936	Edw. G. Budd
	2§	Parlor	64- 0	57,100	Stain. steel	1936	Edw. G. Budd
	2§	Parlor-lounge	78- 8	60,900	Stain. steel	1936	Edw. G. Budd
	2§	Diners	64- 0	65,700	Stain. steel	1936	Edw. G. Budd
	4§	Bagg.-lounge	84- 6	95,600	Stain. steel	1936	Edw. G. Budd
	2§	Coach	76- 3	76,500	Stain. steel	1936	Edw. G. Budd
	2§	Coach	64- 0	64,000	Stain. steel	1936	Edw. G. Budd
	2§	Diners	73- 6	91,100	Stain. steel	1936	Edw. G. Budd
	6§	Sleepers	76- 3	81,600	Stain. steel	1936	Edw. G. Budd
	2§	Sleepers	76- 3	87,100	Stain. steel	1936	Edw. G. Budd
	2§	Lounge-buffet	78- 8	84,300	Stain. steel	1936	Edw. G. Budd
	3	Diners	83- 2	115,000	Stain. steel	1938	Edw. G. Budd
	3	Chair	79-10	90,000	Stain. steel	1938	Edw. G. Budd
	2§	Dinette	.....	65,000	Stain. steel	1938	Edw. G. Budd
	1§	Coach-dinette	.....	60,000	Stain. steel	1938	Edw. G. Budd
	1	Motor-bagg.	.....	201,800	Stain. steel	1938	Edw. G. Budd
	2	Sleepers	87- 6	.....	Stain. steel	1939	Edw. G. Budd
	1	Chair	88- 8	108,400	Stain. steel	1939	Edw. G. Budd
	1	Chair	79- 8	105,000	Stain. steel	1939	Edw. G. Budd
Chicago, Milwaukee, St. Paul & Pacific.....	1	Diner-obs.-parlor-lounge	88- 7	123,800	Stain. steel	1939	Edw. G. Budd
	1	Coach	80- 8	96,000	Carbon steel	1934	Co. shops
	23	Bagg.	74- 6	103,000	Carbon steel	1934	Co. shops
	2	Cafe-bagg.	74- 6	131,500	Carbon steel	1934	Co. shops
	8	Pass.-bagg.	56- 1	57,000	Carbon steel	1934	Co. shops
	50	Coach	81- 8	112,200	Carbon steel	1934	Co. shops
		Dining	75- 8	122,500	Carbon steel	1934	Co. shops
		Parlor	81- 8	113,700	Carbon steel	1934	Co. shops
		Rear parlor	81- 8	112,900	Carbon steel	1934	Co. shops
	2	Rear parlor	80- 6 $\frac{1}{2}$	92,000	H. T. steel	1936	Co. shops
	2	Parlor	81- 7 $\frac{1}{2}$	95,100	H. T. steel	1936	Co. shops
	2	Parlor	81- 8 $\frac{1}{2}$	95,300	H. T. steel	1936	Co. shops
	2	Diners	81- 11 $\frac{1}{2}$	102,500	H. T. steel	1936	Co. shops
	2	Tap room-exp.	81- 11 $\frac{1}{2}$	96,200	H. T. steel	1936	Co. shops
	17	Coaches	81- 8 $\frac{1}{2}$	94,900	H. T. steel	1936	Co. shops
	5	Mail-exp.	75- 3 $\frac{1}{2}$	94,200	H. T. steel	1936	Co. shops
	5	Exp.	75- 3 $\frac{1}{2}$	88,000	H. T. steel	1936	Co. shops
	19	Coaches	80- 8 $\frac{1}{4}$	100,000	H. T. steel	1937	Co. shops
	1	Coach-bunk	80- 8 $\frac{1}{4}$	102,100	H. T. steel	1937	Co. shops
	7	Diners	80- 11	109,600	H. T. steel	1937	Co. shops
	5	Pass.-bagg.	80- 8 $\frac{1}{4}$	98,500	H. T. steel	1937	Co. shops
	1	Mail-exp.	72-10	92,600	H. T. steel	1937	Co. shops
	4	Bagg.-tap room	80-11	98,800	H. T. steel	1938	Co. shops

*On order.

†Articulated units, including combination power unit.

‡Length and weight of train as a whole.

§Car-body units of partially or wholly articulated trains.

Passenger Coaches and Body Units of Articulated Trains in Which the New Structural Materials and New Methods of Fabrication Have Been Used to Reduce Weight—Continued

Road	No. Cars	Class	Length, ft.-in.	Weight, lb.	Structural material	Year built	Builder
Chicago, Milwaukee, St. Paul & Pacific..... (Continued)	4	Diner	80-11	105,400	H. T. steel	1938	Co. shops
	6	Dr. r'm.-parlor	80-8 $\frac{3}{8}$	93,300	H. T. steel	1938	Co. shops
	4	Rear parlor	80-8 $\frac{3}{8}$	91,700	H. T. steel	1938	Co. shops
	16	Coaches	80-8 $\frac{3}{8}$	93,400	H. T. steel	1938	Co. shops
	2	Mail	64-2	90,100	H. T. steel	1938	Co. shops
	10	Pass.-bagg.-mail	70-7	71,600	H. T. steel	1938	Co. shops
	10	Pass.-bagg.	57-2 $\frac{1}{2}$	56,400	H. T. steel	1938	Co. shops
	1	Coach-bunk	80-8 $\frac{3}{8}$	94,000	H. T. steel	1938	Co. shops
	1	Mail-exp.	74-3	94,000	H. T. steel	1938	Co. shops
	3	Bagg.	74-3	90,000	H. T. steel	1938	Co. shops
Chicago, Rock Island & Pacific.....	8 $\frac{3}{8}$	.....	.....	330,500 $\frac{3}{8}$	Stain. steel	1937	Edw. G. Budd
	12 $\frac{3}{8}$	.....	.....	262,300 $\frac{3}{8}$	Stain. steel	1937	Edw. G. Budd
	10	Co. ches	78-6 $\frac{1}{2}$	113,300	H. T. steel	1938	Pull.-Std.
	10	.....	.....	.....	Stain. steel	.....	Edw. G. Budd
Colorado & Southern.....	2	Chair	79-8	.....	H. T. steel	1938	Edw. G. Budd
Delaware & Hudson.....	6	Coaches	.....	.....	H. T. steel	1939	American Car & Fdry.
Florida East Coast.....	2	Pass.-bagg.	.....	.....	Stain. steel	1939	Edw. G. Budd
	8	Chair	.....	.....	Stain. steel	1939	Edw. G. Budd
	2	Diners	.....	.....	Stain. steel	1939	Edw. G. Budd
	2	Obs.-lounge	.....	.....	Stain. steel	1939	Edw. G. Budd
Ft. Worth & Denver City.....	4	Coach	79-10	94,000	H. T. steel	1935	American Car & Fdry.
Gulf, Mobile & Northern.....	3	Coaches	75-10	93,200	H. T. steel	1935	American Car & Fdry.
	2	Obs.-sleeper	77-0	175,800	H. T. steel	1935	American Car & Fdry.
	2	Motor-bagg.	73-4	108,900	H. T. steel	1937	American Car & Fdry.
	1	Sleeper-coaches	77-6 $\frac{1}{2}$	179,400	H. T. steel	1937	American Car & Fdry.
	1	Motor-bagg.	73-4	311,800 $\frac{1}{2}$	H. T. steel	1936	Pull.-Std.
Illinois Central.....	4 $\frac{3}{8}$	.....	.....	.....	H. T. steel	.....	.....
Kansas City Southern.....	4	Coach	83-5	111,600	H. T. steel	1937	Pull.-Std.
Lehigh Valley.....	10	Coach	.....	113,200	.....	1939	Pull.-Std.
Missouri Pacific.....	2	Mail-bagg.	.....	.....	Alum. alloy	1939	American Car & Fdry.
	2	Mail-exp.	.....	.....	Alum. alloy	1939	American Car & Fdry.
	4	Coaches	.....	.....	Alum. alloy	1939	American Car & Fdry.
	2	Diner-lounge	.....	.....	Alum. alloy	1939	American Car & Fdry.
	2	Parlor-obs.	.....	.....	Alum. alloy	1939	American Car & Fdry.
New York Central.....	6	Diners	84-6	133,300	H. T. steel	1938	Pull.-Std.
	2	Coaches	79-10	96,500	Stain. steel	1938	Edw. G. Budd
	4	Mail-bagg.	84-6	124,400	H. T. steel	1938	Pull.-Std.
New York, New Haven & Hartford.....	3 $\frac{1}{2}$	.....	.....	260,600 $\frac{1}{2}$	Alum. alloy	1935	Goodyear-Zep.
	50	Coaches	80-0	107,500	H. T. steel	1935	Pullman-Bradley
	50	Coaches	82-4 $\frac{1}{2}$	107,000	H. T. steel	1936	Pull.-Std.
	50	Coaches	82-4 $\frac{1}{2}$	108,000	H. T. steel	1937	Pull.-Std.
	5	Grille	82-4 $\frac{1}{2}$	118,000	H. T. steel	1937	Pull.-Std.
	50	Coaches	82-4 $\frac{1}{2}$	108,000	H. T. steel	1938	Pull.-Std.
Pennsylvania.....	2	Diner	84-8	105,600	Stain. steel	1937	Edw. G. Budd
	2	Coaches	84-8	105,000	Stain. steel	1938	Edw. G. Budd
	5	Diner	84-6	113,300	Alum. alloy	1939	Pull.-Std.
	5	Diner	84-6	113,300	H. T. steel	1939	American Car & Fdry.
	5	Diner	84-8	118,200	Stain. steel	1939	Edw. G. Budd
	15	Coach	84-8	.....	Stain. steel	1939	Edw. G. Budd
Pullman Company.....	290 $\frac{1}{2}$	Sleepers	.....	.....	.....	.....	Pull.-Std.
Reading.....	2	Coach-obs.	83-6 $\frac{1}{2}$	99,000	Stain. steel	1937	Edw. G. Budd
	2	Coaches	79-10	95,900	Stain. steel	1937	Edw. G. Budd
	1	Diner	82-10	110,400	Stain. steel	1937	Edw. G. Budd
St. Louis-South Western.....	10	Coach	82-4 $\frac{1}{2}$	117,700	H. T. steel	1937	Pull.-Std.
Seaboard Air Line.....	6	Coach	82-4 $\frac{1}{2}$	112,400	H. T. steel	1936	Pull.-Std.
	4	Pass.-bagg.	82-4 $\frac{1}{2}$	109,700	H. T. steel	1936	Pull.-Std.
	1	Pass.-bagg.	84-8	108,000	Stain. steel	1939	Edw. G. Budd
	3	Coach	84-8	102,700	Stain. steel	1939	Edw. G. Budd
	1	Coach-tav.	84-8	107,300	Stain. steel	1939	Edw. G. Budd
	1	Diner	84-8	123,900	Stain. steel	1939	Edw. G. Budd
	1	Coach-obs.	84-10	100,100	Stain. steel	1939	Edw. G. Budd
	2	Pass.-bagg.	.....	.....	Stain. steel	*	Edw. G. Budd
	6	Coach	.....	.....	Stain. steel	*	Edw. G. Budd
	2	Coach-tav.	.....	.....	Stain. steel	*	Edw. G. Budd
	2	Diner	.....	.....	Stain. steel	*	Edw. G. Budd
	2	Coach-obs.	.....	.....	Stain. steel	*	Edw. G. Budd
Southern.....	4	Coach	72-9	114,700	H. T. steel	1939	St. Louis Car Co.
	4	Motor-bagg.	80-0	228,200	H. T. steel	1939	St. Louis Car Co.
Southern Pacific.....	2	Coach-bagg.	79-2	104,300	H. T. steel	1937	Pull.-Std.
	2	Coach	79-2	104,300	H. T. steel	1937	Pull.-Std.
	12 $\frac{3}{8}$	Coach	66-1	85,200	H. T. steel	1937	Pull.-Std.
	4	Tavern	79-2	116,500	H. T. steel	1937	Pull.-Std.
	4	Diner	79-2	115,700	H. T. steel	1937	Pull.-Std.
	4	Parlor	79-2	103,400	H. T. steel	1937	Pull.-Std.
	2	Parlor-obs.	78-1 $\frac{1}{2}$	101,000	H. T. steel	1937	Pull.-Std.
	2	Baggage	79-2	92,000	H. T. steel	1937	Pull.-Std.
	17	Coach	79-2	106,300	H. T. steel	1937	Pull.-Std.
	18 $\frac{3}{8}$	.....	66-1	86,100	H. T. steel	1937	Pull.-Std.
	2	Coffee-shop	79-2	.....	Alum. alloy	1937	Pull.-Std.
	28 $\frac{3}{8}$	.....	.....	.....	.....	*	Pull.-Std.
Texas & New Orleans.....	2	Baggage	79-2	92,100	H. T. steel	1937	Pull.-Std.
	2	Coach	79-2	106,300	H. T. steel	1937	Pull.-Std.
	8 $\frac{3}{8}$	Coach	66-1	89,800	H. T. steel	1937	Pull.-Std.
	2	Parlor	79-2	113,500	H. T. steel	1937	Pull.-Std.
	2	Diner-lounge	79-2	106,500	H. T. steel	1937	Pull.-Std.
Union Pacific.....	3 $\frac{1}{2}$	.....	.....	204,660 $\frac{1}{2}$	Alum. alloy	1934	Pullman
	5 $\frac{3}{8}$	.....	.....	257,000 $\frac{1}{2}$	Alum. alloy	1934	Pullman
	18 $\frac{3}{8}$	.....	.....	670,000 $\frac{1}{2}$	Alum. alloy	1935	Pullman
	20 $\frac{3}{8}$	.....	.....	998,000 $\frac{1}{2}$	Alum. alloy	1936	Pull.-Std.
	2 $\frac{3}{8}$	Diner-lounge	.....	62,300	Alum. alloy	1935	Pull.-Std.
	1 $\frac{3}{8}$	Kitchen-diner-lounge	.....	58,200	Alum. alloy	1935	Pull.-Std.
	40	Coach	81-0	110,500	Alum. alloy	1937	Pull.-Std.
	5 $\frac{3}{8}$	Diner	70-0	207,700 $\frac{1}{2}$	Alum. alloy	1938	Pull.-Std.
	5 $\frac{3}{8}$	Kitchens	70-0	.....	.....	.....	.....
	1 $\frac{3}{8}$	Sleeper	.....	.....	Alum. alloy	1938	.....
	1 $\frac{3}{8}$	Observation	.....	.....	Alum. alloy	1938	.....
Union Pacific— Chicago & North Western.....	14 $\frac{3}{8}$	.....	.....	1,622,700 $\frac{1}{2}$	Alum. alloy	1937	Pull.-Std.
Union Pacific— Chicago & North Western— Southern Pacific.....	14 $\frac{3}{8}$	.....	.....	1,581,200 $\frac{1}{2}$	Alum. alloy	1937	Pull.-Std.

*On order.

†Articulated units, including combination power unit.

‡Length and weight of train as a whole.

§Car-body units of partially or wholly articulated trains.

¶The larger weight is of a four-unit train; the smaller, of a three-unit train.

*These cars, largely of high-tensile alloy-steel construction, include 92 each in service on the New York Central, and the Pennsylvania, 57 less on the Atchison, Topeka & Santa Fe, and six sleepers ordered for the Chicago, Rock Island & Pacific. Included in this number are also 36 sleeping-car-body units of aluminum-alloy construction in service on the Union Pacific. These are also included in the totals above under the Union Pacific, Union Pacific-Chicago & North Western, and the Union Pacific-Chicago & North Western-Southern Pacific.

■Weight of diner and kitchen units combined.

Faster Trains!

Better Track!

Shortened schedules demand a stronger structure, maintained to more exacting standards

ONE of the strong appeals of the faster passenger service that has become so popular today is the comfortable riding of the high-speed trains engaged in this service. No other factor is so likely to reduce the popularity of these trains as that form of discomfort which is created by poor-riding track. Good track is a fundamental requirement for high-speed operation, since it is axiomatic that no train can be expected to ride better than the track over which it runs.

These statements immediately raise the question whether the track in the form in which it exists today is strong enough to withstand the abuse imposed upon it by this class of service and, if it is, whether fundamental changes in maintenance practices are necessary to put or keep it in condition for the continued operation of these faster trains. The first question assumes double importance when it is considered that for many years, owing to the constantly increasing size and weight of locomotives and cars and speed of trains, the track consistently lagged behind the demands that were being made upon it, and safety was a very real concern of maintenance officers.

Beginning about 1923, however, and continuing through the prosperous years ending with 1929, the railways made unusually large expenditures for the purpose of improving the standards of track construction. The result was that the track caught up with and passed the locomotive and that, despite the reduced expenditures for maintenance since 1930, as a result of which some of the strength built into the properties during the previous decade has been withdrawn, the margin of safety that was created in these more prosperous years continued to be far wider than it was prior to 1923.

The Track is Adequate

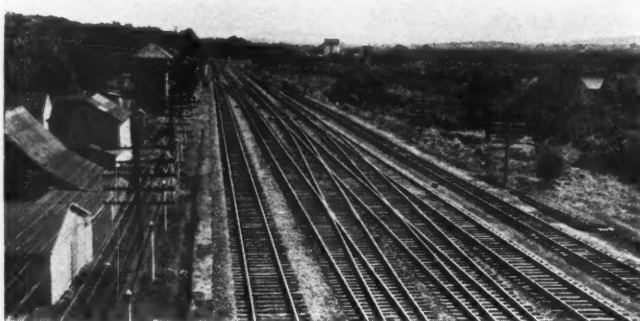
Experience during the last five years has shown that, if constructed to the requisite standard of strength, the present design of track is adequate to meet the demands imposed by high-speed train operation, provided the equipment in the trains is designed for the speeds at



which they are operated. It is evident, therefore, that the present form of track will survive, unless radical changes in the designs of motive power and cars create new demands that it cannot meet. On the other hand, if, as many operating officers believe, locomotives without reciprocating parts are likely to prevail for this so-called super-speed service, the fast trains of tomorrow may be less destructive to the track than the conventional motive power of today.

Although it was common knowledge among trackmen that the effects of irregularities in line, surface or gage were magnified as the speed increased, and that track that rode comfortably at 40 miles an hour might cause discomfort at 60 miles, and be unsafe at speeds appreciably greater, they have learned that even minor irregularities that were not noticeable at the lower speeds cannot be tolerated when the speed reaches 90 to 100 miles an hour. These developments in speeds which have occurred so recently have, therefore, created a new conception with respect to refinements in track maintenance that were not previously warranted on most roads, and this has required an almost complete reorientation of the viewpoint of supervisory officers and men alike toward these minor irregularities.

They have also learned that under high-speed operation, small defects, if neglected, may quickly grow into large ones that affect comfort and may also affect safety. Since the effect of irregularities is magnified as the speed



Diversion of High-Speed Trains Requires Longer Turnouts

increases, it becomes essential that the track be brought to accurate line, surface and gage before the shortened schedules are put into effect, and that this accuracy be maintained from day to day. Track as a whole does not fail suddenly, but gradually under the impact of traffic. This process of failure is accelerated as the speed of traffic increases, for which reason the track must have strength to resist the destructive forces imposed by high-speed traffic; otherwise the maintenance forces will be defeated in their efforts to maintain the degree of accuracy of line, surface and gage demanded by the shortened schedules of today.

Heavier Rail and Fastenings Demanded

One of the important means of increasing the strength of the track is to lay heavier rail, since this insures greater vertical and lateral stiffness to the track, thus increasing its resistance to the traffic forces. In fact, with every extension of high-speed schedules it has been necessary to lay a considerable mileage of heavy rail, and this process is being continued as rapidly as possible on practically every line over which these trains are being operated, for smooth-riding track and assurance against defects that might affect safety have become paramount. Yet it is not possible to realize the full benefits that can be derived from heavy rail unless the remaining details of the track are improved correspondingly. In other words, to be successful, high-speed operation demands, first of all, stability of the track; but strength does not of itself insure stability. The joint holds a place of first importance in this respect, since the continuity of the rail is broken at this point. Therefore, when improving the standard of track construction, most careful attention is being given to selecting joints of proper design to minimize the destructive effects of traffic and insure good-riding conditions at the rail ends.

Good-riding conditions cannot be assured unless the joint bars are kept tight and the running surface at the rail ends corresponds to that on the remainder of the rail. It is necessary, therefore, that the maintenance forces be constantly alert to keep the bolts tight and the joints surfaced. As soon as rail-end batter has progressed, as it will inevitably, to the point where it begins to create wear on the finishing surfaces or to affect the riding qualities of the rail, the rail ends must be built up by welding.

Without tie plates of sufficient area and section to hold the track to gage and prevent mechanical destruction of the ties, even the most intensive efforts of the maintenance forces cannot keep the track to the required standard of excellence. Yet on not a few lines over which high-speed trains are being operated many ties are still equipped with tie plates of small area and thin section, that afford inadequate protection. These plates are be-

ing replaced with others of adequate size as rapidly as the lighter rail is replaced with heavier sections. Likewise, anti-creepers are even more essential for the maintenance of high-speed track. It is the universal experience that, unless restrained, rail will creep under traffic, causing poor line and surface, as well as unsafe conditions, as is attested by the number of derailments that have been traced directly to creeping rail. While anti-creepers have been used for more than three decades to provide this restraint, many maintenance officers have found it desirable to increase the number of anti-creepers to the rail panel on high-speed track.

Must Have Stable Foundation

Even when constructed of the best of materials and designed for the requisite strength, smooth-riding track cannot be maintained unless it is supported on a stable foundation; and this can be secured only with sound ties, clean ballast of adequate depth and stable well-drained roadbed. For this reason, not a few of the roads operating high-speed trains have found it necessary to watch their ties most closely, to increase their appropriations for ballast renewals and to give special attention to both surface and subsurface drainage.

High speeds have focused attention on points of special hazard, as at junctions and points where trains are diverted to other routes. To overcome delays which result from extreme reductions in speeds, longer turnouts with curved switch points are now being installed at many of these points, permitting the diversion movements to be made with safety and comfort at speeds up to 50 or more miles an hour. Likewise, facing-point switches are being eliminated or equipped with switch-point locks, and turnouts are being removed from the high side of curves.

Curves Limit Speed

Curves have always placed a limit on permissible speeds and have presented a major problem with respect to providing smooth-riding track at ordinary speeds. It is not surprising, therefore, that high speeds have brought them into greater prominence because of their effect on schedules and the necessity for a higher standard of maintenance. Not a few roads have found it necessary to revise the alinement of their tracks to eliminate curvature or to reduce it to a degree that will not impose restrictions on their schedules. While it is essential, in the first instance, to select the correct superelevation for the outer rail on the curve, it is equally essential that it be maintained accurately, for even slight variations in elevation create discomfort at high speed and a feeling of insecurity that grows into apprehension, and

(Continued on page 593)



High Speed Demands Accuracy of Line and Elevation on Curves

Faster Train Schedules Affect Signaling

Require longer blocks, more aspects, cab signaling, centralized traffic control and better highway-railroad crossing protection

THE introduction of higher train speeds necessitates changes and additional aspects in automatic block signaling to provide safe train-stopping distances, and additional signal aspects at interlockings in order that high-speed turnouts may be used efficiently, as well as improvements in highway-railroad grade crossing protection to reduce the number of accidents at such locations. Approaching the problem from another angle, interlockings and centralized traffic control provide a practical and economical means of reducing the overall running time of trains by reducing the number of avoidable train delays enroute.

Automatic Signaling Changes

Although many of the light-weight trains are equipped with highly efficient braking systems, the signaling must be arranged to provide adequate braking distances for those trains of older equipment which may be run from time to time as extra sections on the same schedules or when the newer equipment is out of service. Furthermore, many roads are operating trains of conventional equipment in regular service at speeds ranging from 80 to 95 m. p. h., and, in some instances, up to 100 m. p. h. for extended distances.

The braking distance of a train increases in proportion to the square of the increase in speed. The safe stopping distance for a 10-car passenger train of conventional equipment on level tangent track ranges from 4,500 ft. at 70 m. p. h. to 6,750 ft. at 90 m. p. h. Under circumstances where a passenger train traveling at 90 m. p. h. can be stopped in 6,750 ft., freight trains of 80 to 85 cars, most of which are loaded to three times their empty weight, moving at 50 m. p. h., require about the same distance for stopping. Taking into consideration the variations in braking equipment, in weather conditions, and in the mental alertness of enginemen, some roads have established 8,000 ft. as the minimum safe stopping distance for trains on level tangent track, and one or more roads have increased this figure to 9,000 ft.

On this basis, where three-aspect, two-block automatic signaling is used each block must be full stopping distance in length, so that an engineman encountering an Ap-



Four-Aspect Signaling Reduces the Number of Unnecessary Train Stops and Delays

proach aspect can stop his train before arriving at the signal which is displaying the Stop aspect. The distance which an engineman sees an Approach aspect, before arriving at it, can be utilized as additional braking distance, in the vast majority of instances. So adverse weather conditions and smoke from locomotives restrict the range at which signals may be seen, good practice as well as government regulations dictate that signals of the three-aspect type shall be located braking distance apart. The introduction of new high-speed trains has, therefore, brought about the necessity for extensive changes on much of the automatic block signal mileage.

If the blocks are now too short the signals can be relocated to provide longer blocks. This practice, however, reduces track capacity and introduces train stops and delays, especially in the vicinity of interlockings. In some instances, where blocks cannot be lengthened, the controls can be changed to display the Approach aspect on two successive signals in approach to one indicating Stop. This practice not only introduces train delays but also may result in confusion on the part of enginemen, and is, therefore, discouraged by many authorities, except as a temporary measure.

To provide adequate track capacity and the necessary flexibility in the spacings between train movements, especially in the vicinity of passing sidings, junctions, and interlockings, several roads have installed signals which display more than three aspects. For the same train speeds and braking distances, four-aspect, three-block signaling utilizes blocks half as long as those for three-aspect, two-block signaling. In four aspect signaling two blocks are available as train stopping distance, and following trains running on Clear aspects can be spaced 25 per cent closer with safety. The major benefit of multiple-aspect signaling is that in case circumstances ahead become more favorable the engineman of a following train has opportunity at more frequent intervals to receive



Centralized Traffic Control with Power-Operated Switches Reduces the Time Between Terminals Without Increasing Train Speed

more favorable aspects, thus eliminating unnecessary train stops and delays, and thereby permitting all trains to keep moving at the highest speeds consistent with safety.

This advantage of receiving more favorable aspects sooner is a characteristic feature of automatic cab signaling, and it may be contended that, for extended sections of territory where high maximum speeds prevail, cab signaling, with long automatic blocks and three-aspect, two-block signaling controls, will provide adequate track capacity, as well as improved safety and simplicity of aspects. The use of cab signaling includes the further advantage that during foggy or stormy weather trains may be operated on schedule, whereas with wayside signals only they may be required to reduce speed in order to enable enginemen to see the signal aspects.

Interference of Train Movements

Under certain circumstances on territories where passing track switches are hand-operated and train movements are directed by time-table and train orders, the introduction of trains on especially fast schedules causes extra delay to other trains. To be sure that the faster trains meet with no interference, some roads are requiring that all other trains clear the main line at least 20 min. prior to the scheduled time of the high-speed trains, whereas with previous practice the limit may have been 10 min., or on many roads the requirement was that a train should be in the clear a sufficient time to insure that the faster trains received clear automatic signals. As a high-speed train must pass all other trains operated in the same direction on a double-track line, and must meet or pass all other trains on a single-track line, the delay to other trains in making meets and passes has been increased decidedly on some roads. In many instances the peak of traffic, with reference to meets and

passes, occurs on territories adjacent to termini or on divisions midway in overnight runs between termini. As has been proved in several such instances the most economical and effective means of eliminating delays is to provide centralized traffic control, by means of which train delays are reduced to the minimum. On territories where the number of passes exceeds the number of meets the installation of centralized traffic control on an existing single-track line will result in more efficient train operation than can be secured by the addition of a second track, unless it is the practice to operate trains in either direction on both tracks. On double-track or multiple-track lines the installation of centralized traffic control to permit either-direction operation on both tracks is effective in keeping all trains moving without delays otherwise occasioned by making passes.

High-Speed Turnouts and Signal Aspects

Additional aspects on home and distant signals at interlockings have been made necessary by the installation of new turnouts and crossovers, which have been provided as a means of reducing the time lost by trains when making diverging moves. In addition to the Clear aspect for directing train movements on straight track through routes at maximum permissible speed, the 1938 edition of the Standard Code provides aspects for home and distant signals for four ranges of speed, for directing train movements over diverging routes at speeds less than maximum authorized speed as follows: restricted, slow, medium, and limited.

Wherever new high-speed crossovers and turnouts are installed, additional signal aspects must be provided as a means of directing trains up to the home signal and through the plants at the maximum speeds for which the track facilities are designed; otherwise the advantage of the new crossovers and turnouts is lost. For example, if a new crossover between main tracks is good for 45 m. p. h., but a turnout between a main and a third track is good for only 25 m. p. h., proper aspects must be provided to direct trains at the proper speeds on either of the two routes for otherwise the speeds on both must be limited to 25 m. p. h. In this way new track facilities provided to expedite the faster trains have brought about the need for numerous additional signal aspects at many interlockings.

Better Highway Crossing Protection

The introduction of high-speed trains has increased the hazard at highway grade crossings, especially on multiple-track lines. The railroads have gone to extremes to pro-



Flashing-light Signals with Short-arm Gates Afford Improved Protection for Tracks Handling High-Speed Trains

vide crossing signals at practically all of the crossings with important highways, and the federal government has aided in this activity during recent years. It would seem, therefore, that those automobile drivers who will not take the time necessary to observe and be governed by the signals can be blamed for the accidents resulting from their own carelessness. Nevertheless, accidents continue to occur, especially at multiple-track crossings where automobiles or trucks, after waiting for a train to pass on the nearest track, start moving immediately, without taking notice that the signals continue to operate on account of the approach of a second train on another track. A conclusion is that, where multiple-lane highways cross heavy traffic lines, and where any heavy traffic highways cross multiple-track lines, something more than signals is needed.

The next form of protection beyond signals is some sort of a barrier, such as a gate, that will effectively deter drivers of vehicles from proceeding onto tracks, when otherwise, due to their carelessness in observing signals, they might be hit by a train. For such use the short-arm gate, which extends over only the lane or lanes approaching the crossing, has received extensive approval and numerous installations have been made.

The first installation of this character was placed in service as recently as 1936, but since that time many more have been installed as auxiliary protection for standard flashing light signals. In brief, it may be said that such installations accomplish the results for which they were designed. The United States Public Roads Administration, which has jurisdiction over the federal funds allocated for installations of crossing protection as a means of improving highway safety, believes that the additional expense required to include short-arm gates is justified in installations at multiple-track crossings, as well as at crossings of single-track lines on which trains are operated at specially high speeds. Several states are proceeding on this basis.

"Speed Limit—Ninety Miles!"

(Continued from page 579)

January 28, 1935	A Pennsylvania streamlined electric locomotive on the first run powered by electricity between Washington and Philadelphia, averaged 74 m.p.h., with a top speed of 102 m.p.h.
April 6, 1935	The Twin Zephyr (C. B. & Q.) ran from Chicago to St. Paul, 431 miles, in 5 hr. 33 min., an average of 77.6 m.p.h., with a top speed of 104 m.p.h.
April 29, 1935	The Comet (N. Y., N. H. & H.) ran from New Haven to Boston, 157 miles, at an average speed of 66 m.p.h., and a top speed of 110.3 m.p.h.
May 10, 1935	The Abraham Lincoln (Alton) made a trial run of 124 miles at a continuous speed of 80 m.p.h. or better.
May 15, 1935	The Hiawatha (C. M., St. P. & P.) ran from Milwaukee to New Lisbon, 141 miles, in 113 min., or an average speed of 74.9 m.p.h., reaching a high of 111.5 m.p.h., which was maintained for three miles.
June 24, 1935	The Royal Blue (B. & O.) ran 6 miles in 3 min. 40 sec., or an average speed of 95 m.p.h., from start to stop.
October 13, 1935	The Mark Twain Zephyr (C. B. & Q.) made a round trip, Chicago to St. Paul and return, 882 miles, in 12 hr., or at an average speed of 73.5 m.p.h.

October 16, 1935

In preparation for new Super-Chief runs, a standard train (A. T. & S. F.) weighing 720 tons, ran from Chicago to Los Angeles, 2,228 miles, in 39 hr. 34 min., including 11 stops.

October 23, 1936

The Denver Zephyr (C. B. & Q.) ran non-stop from Chicago to Denver, 1,017 miles, in 12 hr. 12 min., or at an average speed of 83.3 m.p.h., with a top speed of 116 m.p.h., and a 27-mile stretch at 105.8 m.p.h.

May 17, 1937

The Super-Chief (A. T. & S. F.) ran from Los Angeles to Chicago, 2,228 miles, in 36 hr. 49 min., at an overall speed of 60.5 m.p.h., including 17 stops. The 202 miles from La Junta, Colo., to Dodge City, Kan., were run in 139 min., at an average of 87.2 m.p.h.

The effect of American streamliner operations has been world-wide. High-speed streamlined trains are now operated in points as far apart as Manchuria and Argentina. On the European continent, where rigid speed restrictions formerly existed, the picture has been radically changed. In France the previous limit of 75 m. p. h. has been raised to 81 m. p. h. for trains and 93 m. p. h. for high-speed rail cars. In Belgium and Holland the 75-mile limit has been raised to 87 m. p. h., with 100 m. p. h., under consideration. In Germany and Italy high-speed trains are permitted 100 m. p. h. Most of these changes came about as a result of the study of American high-speed operations.

Faster Trains! Better Track!

(Continued from page 590)

they may also become of danger. Of equal importance, the approach to the curve must be gradual to insure a smooth-riding transition from the tangent to the curve, or vice-versa, which requires the installation of spirals having the proper relation between the length of the spiral, the rate of change in curvature and the rate of transition from level track to the superelevation of the curve. It is now the general practice to make the spiral of such length that the lift from zero to full elevation will not exceed $1\frac{1}{4}$ in. per second at the maximum speed.

Must Not Slow Down Trains

Where schedules call for high average speeds every minute counts. Obviously, train operation will be at its best when the maximum and minimum speeds are kept as near the average as practicable. Any unscheduled reduction in speed causes a loss of time that must be made up later by speeds that are well above the average and that in most cases must be sustained for a long distance, since it is one thing to regain lost speed and another to regain lost time. For these reasons, slow orders that can be avoided can no longer be tolerated, and the maintenance forces are finding it necessary to revise their methods of doing work in such a way as to eliminate obstructions and thus permit trains to pass without speed restrictions. Where slow orders become necessary for reasons of safety, as after severe storms, shortened schedules make it essential that they be removed at the earliest practicable moment.

It will thus be seen that the maintenance forces are confronted with two conflicting conditions as a result of the higher speeds. On the one hand, they are facing a more rapid destruction of the track structure, and, on the other, a demand that it be maintained to a higher

standard of excellence than ever before. In addition, they must do their work under the handicap of eliminating all obstructions to the passage of trains at full speed.

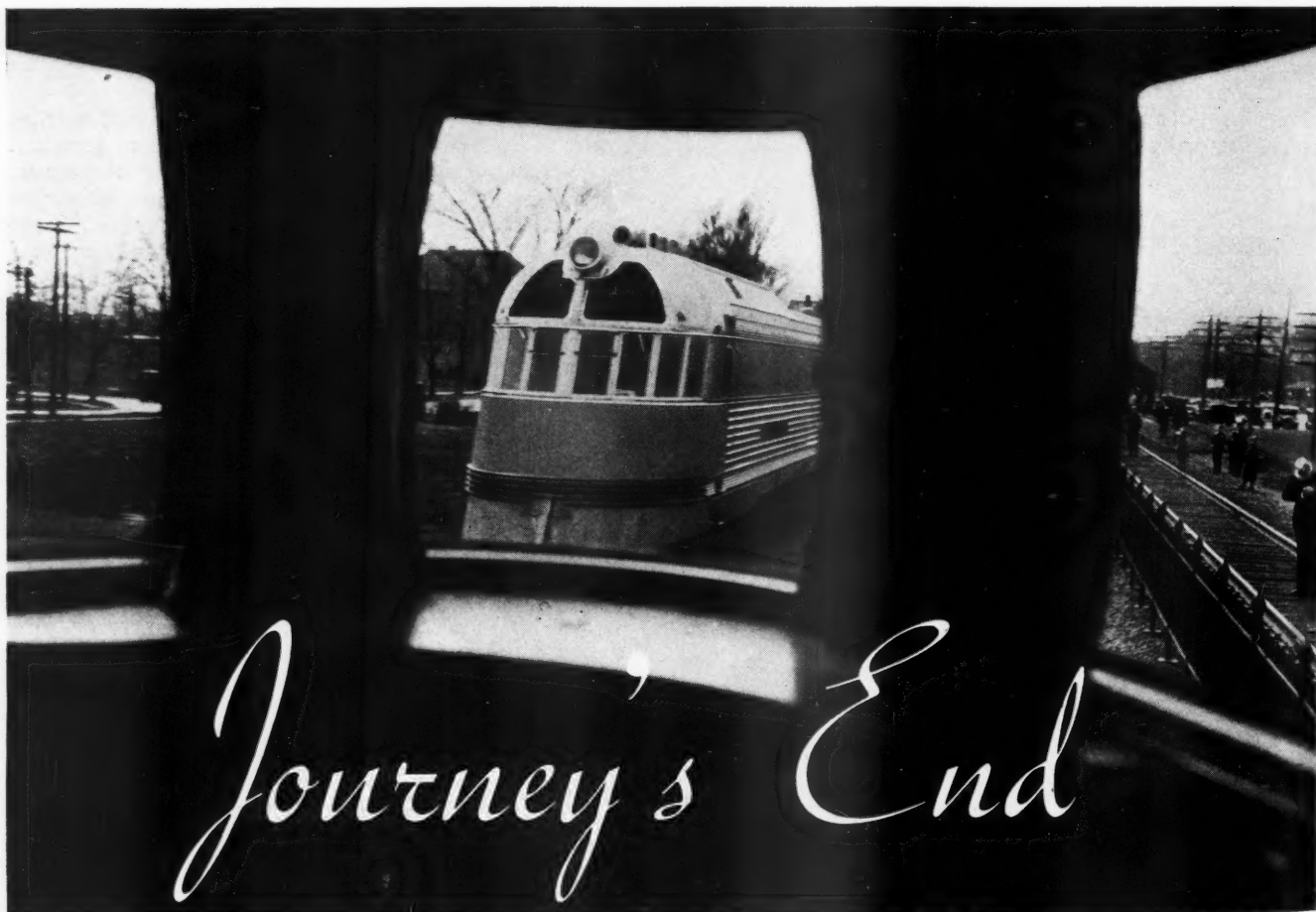
How They Are Being Met

These conditions are being met, first, by building stronger track with heavier rail and fastenings, and sound ties, with stability assured by deeper ballast supported on a well-drained roadbed; and, second, by raising the standard of track maintenance to a higher level. This latter is being accomplished by a closer inspection of turnouts and the superelevation on curves; by the day-to-day corrections of defects in line, surface and gage; and by doing the work in such a way that it will be more permanent. Obviously, these requirements cannot be met by the ordinary methods of track maintenance as they were understood five years ago. To meet them it has been necessary to utilize work equipment to its fullest practical extent, not only to lower the cost of maintenance but to insure added permanence to the work that is done, creating an added demand for certain types of machines that are particularly adapted for this work.

These include particularly tie-tamping equipment, bolt tighteners, welding equipment, grinders, ballast cleaners, ditching and trenching equipment, rail cranes, tie adzers, spike pullers, spike drivers and other equipment espe-

cially adapted for track and roadbed maintenance, including the laying of rail, the ballasting of track and the drainage of the roadbed. So important has it become that there be no interference with the movement of trains, that the trend toward the substitution of off-track machines for rail-bound equipment, already under way, has been greatly accelerated by the requirements of track maintenance for high-speed trains.

The inauguration of high-speed operation occurred suddenly and somewhat dramatically with maintenance officers more or less unprepared to meet the demands imposed by the new service, which has spread consistently from one road to another, until today these trains are engaged on runs that aggregate many thousands of route miles. These officers realized immediately, however, that the higher speeds would be possible only if the refinements in maintenance kept pace with the demands they made on the track, and they have accepted the challenge. We have entered permanently into a new era of speed, for we have gone too far to revert to the speeds of yesterday, while those of tomorrow may be as much greater than those of today as the present speeds exceed those of yesterday. These fast trains, therefore, present a challenge to railway management to afford the maintenance of way department every facility in the way of materials and equipment that it may need to provide track of the requisite strength and to maintain it to the highest standard of excellence.



NEWS

Atlantic Board Offers Advice

Carriers told they need more car checkers—Speaker pokes fun at statistical publicity

The Atlantic States Shippers Advisory Board, whose commodity carloadings committees estimated that loadings in the area would be 14.6 per cent greater this quarter than actual loadings of the corresponding period of 1938, concentrated, during their meeting in Newark, N. J., on October 5, on the ability of the railroads to care for increased business. M. J. Gormley, executive assistant, A. A. R., addressed the meeting on the subject of railroad capacity, which was reprinted in full in last week's issue. (A footnote erroneously reported the meeting to have been held in Atlantic City.)

The report of the committee on freight and locomotive equipment, presented by C. J. Fagg, traffic counselor, Newark, held the opinion that, while the railroads have sufficient equipment to handle increased business, there has not been sufficient progress made in distribution so as "to have the cars in the right spot or the right type of car at the right time." In illustration it was pointed out that, on a particular road observed, four good cars stood on a siding for a week while nearby shippers were looking for suitable equipment to load freight. The committee believed that maximum utilization is not being obtained because the carriers are short on yard checkers and reports by station agents of empties on hand and because there is not enough motive power to handle the empties to loading points.

The committee called attention to the difference between capacity of non-rail transportation facilities during the last war and at the present time. Whereas in 1917 some 300,000 trucks were registered, 4,300,000 are now known to exist. Predicated on an average carrying load of two tons and a daily movement of about 40 miles, these 4,000,000 trucks could carry in one day 8,000,000 tons of freight or about 2,500,000,000 tons per year. The committee also recalled that whereas only 5,000 buses were registered in 1917 some 135,000 are registered at the present time. Estimating a passenger capacity of 10 persons, these vehicles could carry 1,300,000 passengers a distance of 200 miles in one day. In 1917 the railroads were called upon to do a very substantial passenger business of an emergency nature; today this load could

I. C. C. Seeks More L. c. I. Data for Senate Probe

The Interstate Commerce Commission on October 5 issued an order calling for additional information in connection with its work of gathering data for the investigation which the Senate committee on interstate commerce is conducting into railroad methods of handling forwarder, l. c. l. and express traffic. The additional information sought will require "special reports from railways serving selected cities where there is keen competition for the available l. c. l. freight traffic to determine how many through package cars are being terminated at those cities, the average loading of such cars and the routes used"; it will supplement the data compiled in response to the questionnaire accompanying a previous order, noted in the *Railway Age* of September 16, page 422.

The special reports are required on 35 cities, including 10 in the Eastern district, 10 in the Southern district and 15 in the Western district.

be handled partially by motor vehicle. Reference was also made to the large growth in pipe line capacity. On the basis of this change in our economic machinery, the committee urged that "when the railroads are considering power equipment and locomotive power they should consider these other elements so that they do not put into capital account large sums of money that the shipper must pay for."

F. H. McGuigan of the Prudential Company of America, Newark, was the luncheon speaker. Taking the subject "Some Views on the Railroad Industry from an Investor's Standpoint," his speech was of a broad nature touching briefly upon many separate topics. Speaking of the continuous efforts of shippers to obtain lower rates, the speaker declared, "Shippers have been known to promise additional traffic in return for reductions in rail rates, but instead of giving it, have used those reductions to force concessions from truckers to whom they continued to give traffic." The whole process reminded him of school-time "snipe hunts," wherein the victim was left holding a large empty bag for a long time on a very cold night.

Of "feather-bedding" in working agreements with railroad labor, Mr. McGuigan pointed out that while some publicity was

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Beven Discusses R. R. Capacity

Only in equipment has r. r. plant dwindled and this can be rapidly restored

The railroads of the country can and will be prepared to meet increased demands for transportation as they develop, according to J. L. Beven, president of the Illinois Central, in an address on "The Railroads at Work" made at the annual transportation luncheon of the Illinois Chamber of Commerce at Chicago on October 12. "We are now in the midst of a decided upturn in industrial production," Mr. Beven said. "How far it will go and how sustained it will be are frankly beyond our present range of vision. This much I do know—if private ownership of railroads is to be preserved in accordance with the American tradition, and if we are to be fully prepared for whatever may come in demands of transportation, the railroads must be in a state of readiness. If they are not in that state at present, they must be brought to it. All other questions in connection with rail transportation will have to be relegated to the background for the time being and all attention centered on this question of readiness of the railroads to perform necessary service."

The ability of the railroads to perform necessary service under the stress of increased demands for transportation was discussed in terms of road capacity and rolling stock. With regard to road capacity Mr. Beven said:

"There is still, after the recent large increase in traffic volume, a tremendous amount of unused road capacity. We have all the road capacity we had in the twenties, and the roadway plant has been maintained better than a comparison of maintenance expenditures would indicate. In estimating the current condition of railroad property, many people are led astray by mere dollar comparisons without making due allowance for improved materials, improved machinery and improved methods which have come into use in construction and maintenance work."

With regard to rolling stock Mr. Beven said: "We are obviously faced with certain present deficiencies for handling further large increases in traffic volume. What sin is there in that admission? Who could expect the railroads to be in the pink of condition to meet any conceivable emergency after ten years of subsistence on a

starvation diet? I think the railroads are in better shape than the use that has been made of them warrants, and for that a vote of thanks is due their stockholders and bondholders, who have patiently gone without in order that the railroads might keep ahead of the game.

"I also think the railroads are in better shape for rolling stock than some people think who do not make proper allowance for the changes that have occurred in recent years. We have fewer cars, but they are bigger and better cars. We have fewer locomotives than we once had, but present locomotives have more pulling power on the average. That is true because the locomotives and cars that have been retired are naturally the oldest equipment, and also because, speaking of locomotives particularly, the railroads have followed the practice of improving their equipment in the regular course of maintenance. Furthermore the movement of freight has been greatly speeded up. All these things make a difference. It has been estimated, and I believe the estimate is sound, that because of these and other improvements it would be possible to handle the 1929 volume of business with 350,000 fewer cars than were used in that year or the 1918 volume of business with 600,000 fewer cars than were used in that year. That is an important fact in the situation of the railroads, and it cannot be stated too strongly.

"However, granting that there are certain deficiencies in rolling stock for handling a conceivable increase in the demand for rail transportation, what can and will be done to meet that situation? The railroads of the United States have answered that question, and the answer has been given in the plainest language possible. At a meeting held in Washington on September 19, the railroads of the country announced their determination to take immediate steps to put their cars and locomotives in shape to handle any possible increase in business. Obviously this entails the repair of existing equipment, both cars and locomotives, which have not been needed because there was no business for them to handle. Furthermore, it entails the purchase of additional equipment as needed to add to the capacity of the railroads, and orders for new equipment have been in the headlines almost daily since then. The American people have the word not of one spokesman for the industry but of the entire united industry, that these things can and will be done, and they are being done."

The determination of the railroads to put themselves in readiness was referred to as "insurance against government ownership." Mr. Beven said:

"There is no secret in the fact that we who are engaged in the railroad business do not want government ownership. I believe it is equally true and equally well known that the shippers of the country, who must look to the railroads mainly for transportation, also do not want government ownership. Moreover, the best insurance against the possibility of government ownership is for the railroads to be ready at all times to measure up to the requirements that are imposed on them.

President Could Take Over R. R.'s Merely By Proclamation if War Should Come

Statutes relating to transportation were among those listed by Attorney General Murphy in a recent letter responding to Senate Resolution No. 185 calling for information as to the extraordinary powers available to the President during a national emergency or state of war. The Attorney General listed the Act of August 29, 1916, authorizing the President, through the Secretary of War, to take possession and assume control of any system or systems of transportation or any part thereof "in time of war"; the Act of February 4, 1887, providing for preference to shipments of troops and material of war upon demand of the President "in time of war or threatened war"; and Section 402 of the Transportation Act authorizing the Interstate Commerce Commission to direct preferences and priorities upon certification by the President that such preferences and priorities are essential to the national defense and security "in time of war or threatened war."

The Attorney General's letter made no claim that the list submitted was complete, since "accuracy in this respect can be assured only by careful and painstaking search of the entire body of the federal statutory law."

They have been measuring up to these requirements for the last 15 years, and I believe they can and will continue to measure up."

In conclusion Mr. Beven said: "None of us can know what lies ahead. However, it is plain that the railroads, as the one indispensable agency of transportation, have a large part to play in the future, whatever it may be. It is for us in railroading to accept the determination that we shall play that part with credit. It is for you who are users of transportation to help us to do so. Together we can, and I believe we will, make good in doing the work of the railroads."

North Carolina Intrastate Rules

Examiner Burton Fuller has recommended in a proposed report that the Interstate Commerce Commission find that the maintenance of North Carolina intrastate rates on a lower basis than the interstate scale results in undue prejudice to interstate shippers and unjust discrimination against interstate commerce. The proposed report's recommended finding, if adopted by the commission, would permit increases to the interstate level of intrastate rates now held down by orders of the North Carolina Utilities Commission.

R. B. A. Dinner

Following in large measure the innovation of a speakerless banquet introduced at its dinner last year, speaking at the

dinner to be held at the Stevens Hotel, Chicago, on the evening of November 9 will be confined to brief remarks by J. J. Pelley, president, Association of American Railroads.

Johnston to Address Western Railway Club

The next meeting of the Western Railway Club, designated as "Executives' Night," will be held on October 16 at the Hotel Sherman, Chicago. A paper entitled "The Present Railroad Situation" will be discussed by C. E. Johnston, chairman, Western Association of Railway Executives. A reception and dinner will precede the meeting.

Mills Succeeds Patterson as I. C. C. Safety Bureau Director

Shirley N. Mills, assistant director of the Interstate Commerce Commission's Bureau of Safety since 1919, has been appointed director to succeed W. J. Patterson, who has been a member of the commission since July 31, having been appointed by President Roosevelt to succeed former Commissioner B. H. Meyer.

Veterans to Meet in Roanoke October 14 and 15

The 30,000-member United Associations of Railroad Veterans will hold their annual convention at the Hotel Roanoke, Roanoke, Va., October 14 and 15. Between 275 and 300 delegates, representing 32 railroads throughout the country are expected to attend. George Duglinson, Jr., vice-president (traffic), Norfolk & Western, will be the principal speaker at the reception and banquet to be held on the first day.

Allows Truck-Compelled Rates in New England

The Interstate Commerce Commission, Division 3, has found justified reduced l.c.l. rates on groceries from Boston, Mass., and Springfield to points in Maine, New Hampshire, Vermont and New York, and reduced carload and l.c.l. rates on paper and paper products from points in those states to Boston. The tariffs filed by the Boston & Maine, Boston & Albany and Maine Central and their connections were published "in an effort to recover some portion of the traffic in groceries and paper which they have lost to the trucks."

Short Lines Report Agreement on Chicago Board Dispute

The committees consisting of representatives of the railway labor unions and the managements which have been discussing the handling of cases before the National Railroad Adjustment Board have indicated an agreement has been tentatively reached whereby a "policing" organization will be established to stop "short-cutting" (taking cases to the Board before presenting them to railway officers). Such at any rate is the report sent out last week by the Short Line Railroad Association to its members, which official sources neither confirm nor deny. The policing organization would consist of six representatives of the management and six of the railway labor

unions, two men from each of the Eastern, Southern and Western territories.

The proposed agreement will provide that when direct negotiations between the highest designated officer of the carrier and representatives of the organizations on the property fail to settle a dispute, a complete statement of the dispute will be referred by the organization representative to the chief executive officer of the organization involved, to the end that further effort may be made to settle the dispute through conference, or to insure proper submission to the National Railroad Adjustment Board.

Any agreement reached must be adopted

by the railway labor unions and the managements before becoming effective.

G. M. & N. Affiliate Gets Trucking Certificate

The Interstate Commerce Commission, Division 5, has conditionally authorized the Gulf Transport Company, affiliate of the Gulf, Mobile & Northern, to operate as a common carrier trucker over specified routes between points in Tennessee, Mississippi, Louisiana and Alabama, serving intermediate and off-route points which are stations on the rail line of the G. M. & N. The conditions attached to the granting of

the certificate are the five which the commission has been imposing in all recent cases involving general motor applications of railroads and their affiliates. They stipulate that the service authorized shall be limited to that which is auxiliary or supplementary to G. M. & N. rail service; that the Transport Company shall not serve or interchange traffic at any point which is not a station on the G. M. & N.; that shipments handled shall be limited to those received from or delivered to the railroad; that all contractual arrangements between the Transport Company and the G. M. & N. shall be subject to I. C. C. scrutiny; and that the certificate shall be subject

What Will the Traffic Bear?—35

What is keeping the railroads from renovating their rate structure to meet modern competitive conditions? Last week in this space we discussed the difficulties which arise from some railroads having connections with forwarding and trucking companies, which have cost them good money and which they cannot be expected to (or anyhow they won't) toss out of the window just because somebody else thinks it might be a good idea.

But this isn't the only obstacle. There is another one which is mighty hard to justify—that is, ex-

300 miles and practically none of it is being trucked beyond 500 miles. By this rate change, the 20-cent short-haul rate is reduced only 7 cents and the 60-cent long-haul rate is reduced 20 cents.

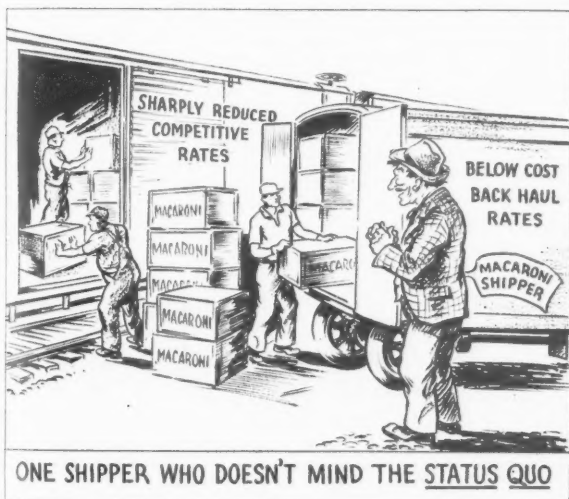
Now it is well known that truck terminal costs are lower than rail, while line-haul costs are materially higher. Likewise rail class rates do not progress in the same ratio with truck rates. Assuming that these reductions were made to meet actual truck competition, if it is necessary to reduce the 20-cent rate only 7 cents, then it is utter waste of revenue to reduce the long-haul 60-cent rate by 20 cents, because the long-haul is less susceptible to competition than the short-haul. It would have been necessary to reduce the long-haul rate only 7 cents even if it was intended to preserve the competitive relationship between shippers.

Any informed student of truck costs knows that truck rates at this low level will barely cover expenses for gas, oil and labor (especially beyond 200 miles) and are published by the trucks only for back-haul movements. Truck tariffs are chock full of rates intended only to realize out-of-pocket return-load costs.

Trucks and shippers cannot escape their responsibility for this destructive practice, but they cannot reasonably be expected to abandon it so long as it is profitable for them to keep it up. But the railroads can put a stop to it by refusing to make competitive rates at less than cost, and by insisting that trucks also be not permitted to make rates lower than their own costs. Actual costs of movement should constitute a "floor" for the competitive rates of any transportation agency and permission should ordinarily not be granted to go below such costs.

Individual railroads may well be (and undoubtedly are) fearful of big stick shippers but the A. R. and the various railroad rate associations could safely handle these rate questions for their individual members, if the railroads would reconcile their individual differences and permit these agencies to take such action.

The railroads will never solve their competitive problems if they hold off doing anything about them until they obtain the consent of shippers who are the beneficiaries of these unsound practices. The owner of the corner saloon doesn't usually contribute to the W. C. T. U.



treme tenderness toward the feelings of shippers who happen to occupy a privileged position under the *status quo*. These fellows have not paid anything for their favors—but they hang onto them just as tenaciously as if they were a "right" they had sweat and bled for.

For instance, take the case of the macaroni shipper who is playing trucks and rails against each other. Only recently this shipper induced Western railroads to publish a rate of 20 per cent of first class on his product, notwithstanding the fact that these railroads had hitherto consistently refused to publish less than 29½ per cent of first class on canned goods—and macaroni is one of the lightest loading commodities in the canned goods list. More than 75 per cent of this commodity is moving by truck, but a large part of this movement is within

to such further conditions as the commission may hereafter find necessary to restrict the trucking operations to services auxiliary or supplemental to G. M. & N. rail service.

"These findings," the commission adds, "are not to be understood as restricting the right of the railroad to use motor facilities in the manner, and to the extent, contemplated by Part I of the Interstate Commerce Act. . ."

Motor Carriers Mustn't Hinder I. C. C. Agents

Motor carriers and brokers subject to the Motor Carrier Act have been directed by the Interstate Commerce Commission, Division 1, to permit the commission's special agents and examiners to inspect and examine all property, records and accounts. The order, finding authority for its requirements in section 220 of the Motor Carrier Act, sets forth that the work of the special agents and examiners has been hindered and obstructed by carriers and brokers which have "on occasions" refused to permit inspections and examinations of their property and records.

Loss and Damage Payments Decline in First Half

Loss and damage payments during the first six months of 1939 dropped 21.5 per cent as compared with the same period in 1938. This year the total was \$9,185,333, as compared with \$11,698,277 in the first six months of 1938, a decrease of \$2,512,944. Unlocated damage and improper handling were reduced 21.4 per cent, delay 25.5 per cent, defective equipment 22.2 per cent, and concealed damage, 18.4 per cent. Payments on fresh fruits, melons and vegetables in the first six-months of 1939 totaled \$1,880,421, compared with \$2,458,409, a year ago, a decrease of 23.5 per cent.

Safety Congress Expected to Draw 10,000

The 28th annual National Safety Congress, which will convene in Atlantic City, N. J., for a five-day period starting October 16, has as its keynote the thesis "that safety can be obtained in any quantity by anyone or any organization that wants it—just as groceries may be obtained." The 10,000 representatives who are expected to attend are classified into 24 sections covering separate industries and government and social activities. Some 500 speakers and discussion leaders will direct the delegates in 140 separate sessions. More formal addresses will be delivered at the convention banquet and the annual meeting of members which launches the congress.

Oral Argument on Safety Rules for Private Trucks

The Interstate Commerce Commission has set November 21 and 22 as the dates for oral argument before Division 5 on the Ex Parte No. MC-3 case involving safety regulations for private trucks operating in interstate commerce. Examiner R. W. Snow's proposed report, as noted in the *Railway Age* of August 5, page 223, recommended that I. C. C. regulations governing maximum hours of service of drivers

and safety of operation and standards of equipment of common and contract truckers should, with relatively minor exceptions, be made applicable also to interstate private trucks.

Railway Age Editor to Address N. Y. Railroad Club

Samuel O. Dunn, editor of *Railway Age* and chairman of Simmons-Boardman Publishing Corporation, will speak on "Watchman, What of the Night?" at the next meeting of the New York Railroad Club, to be held in the Engineering Societies building, 33 West 39th street, New York, at 7:45 p. m., October 19. Among other things Mr. Dunn will present the thesis that the so-called "failure" of private railroad management during the last war was principally a failure of government by excessive interference with operations.

Special entertainment by an octette and

the usual buffet constitute the remainder of the program.

I. C. C. Compilation of Income and Balance Sheet Items for July

The Interstate Commerce Commission on October 5 made public its latest monthly compilation of selected income and balance sheet items, showing July's net income of the Class I roads as \$6,577,784, and the net deficit for this year's first seven months as \$84,699,492, as reported previously by the Association of American Railroads and noted in the *Railway Age* of September 30. The foregoing compare with a July, 1938, red figure of \$3,884,635, and one of \$183,905,836 for last year's first seven months.

Seventy-three roads reported net deficits for July, while 58 reported net incomes; in July, 1938, there were 81 net deficits and 50 net incomes. The consolidated

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS

Compiled from 134 Reports (Form IBS) Representing 139 Steam Railways
(Switching and Terminal Companies Not Included)

TOTALS FOR THE UNITED STATES (ALL REGIONS)

For the month of July		Income Items		For the seven months of	
1939	1938			1939	1938
\$49,012,189	\$38,431,253	1. Net railway operating income	\$214,763,110	\$109,616,764	
11,892,989	11,575,292	2. Other income	78,123,640	80,135,901	
60,905,178	50,006,545	3. Total income	292,886,750	189,752,665	
1,901,655	1,915,186	4. Miscellaneous deductions from income	13,730,596	14,198,703	
59,003,523	48,091,359	5. Income available for fixed charges	279,156,154	175,553,962	
11,797,030	11,086,316	6. Fixed charges:			
		6-01. Rent for leased roads and equipment	79,078,135	73,629,490	
39,483,521	39,666,550	6-02. Interest deductions	127,752,457	127,248,095	
132,058	210,556	6-03. Other deductions	930,438	1,491,500	
51,412,609	50,963,422	6-04. Total fixed charges	356,761,030	352,369,085	
7,590,914	*2,872,063	7. Income after fixed charges	*77,604,876	*176,815,123	
1,013,130	1,012,572	8. Contingent charges	7,094,616	7,090,713	
6,577,784	*3,884,635	9. Net income†	*84,699,492	*183,905,836	
16,792,735	16,907,191	10. Depreciation (Way and structures and equipment)	117,743,418	117,820,733	
2,559,528	1,336,621	11. Federal income taxes	12,139,319	6,736,736	
1,482,500	637,985	12. Dividend appropriations:			
764,962	1,092,585	12-01. On common stock	29,352,324	34,085,737	
		12-02. On preferred stock	10,211,455	6,572,936	
		13. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	\$636,302,963	\$654,155,589	
		14. Cash	440,088,460	328,590,414	
		15. Demand loans and deposits	17,869,021	9,276,505	
		16. Time drafts and deposits	20,991,341	18,500,733	
		17. Special deposits	58,513,098	51,394,724	
		18. Loans and bills receivable	1,573,812	1,578,986	
		19. Traffic and car-service balances receivable	55,533,260	50,933,016	
		20. Net balance receivable from agents and conductors	49,035,600	43,626,759	
		21. Miscellaneous accounts receivable	122,519,122	130,124,743	
		22. Materials and supplies	312,341,740	345,388,587	
		23. Interest and dividends receivable	13,922,318	17,567,544	
		24. Rents receivable	1,131,007	1,124,455	
		25. Other current assets	6,906,294	5,399,070	
		26. Total current assets (items 14 to 25)	\$1,100,425,073	\$1,003,505,536	
		Selected Liability Items			
		27. Funded debt maturing within 6 months|| . . . . .	\$153,964,078	\$134,195,627	
		28. Loans and bills payable#	244,374,088	247,474,787	
		29. Traffic and car-service balances payable	77,866,221	71,363,732	
		30. Audited accounts and wages payable	233,664,103	236,782,179	
		31. Miscellaneous accounts payable	68,373,155	58,663,831	
		32. Interest matured unpaid	891,006,680	738,539,227	
		33. Dividends matured unpaid	4,891,685	1,753,746	
		34. Funded debt matured unpaid	800,966,614	606,442,795	
		35. Unmatured dividends declared	2,340,872	996,441	
		36. Unmatured interest accrued	92,274,940	96,836,694	
		37. Unmatured rents accrued	28,464,148	26,432,749	
		38. Other current liabilities	24,203,978	20,649,926	
		39. Total current liabilities (items 28 to 38)	\$2,468,426,484	\$2,105,936,107	
		40. Tax liability (Account 771):			
		40-01. U. S. Government taxes	\$58,722,759	\$46,786,784	
		40-02. Other than U. S. Government taxes	157,411,023	154,966,925	

† Represents accruals, including the amount in default.

‡ For 100 railways not in receivership or trusteeship the net income or deficit was as follows: July 1939, \$16,689,481; July 1938, \$7,284,339; 7 months 1939, \$1,333,205; 7 months 1938, \$76,469,955.

§ Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within six months after close of month of report.

|| Includes obligations which mature not more than 2 years after date of issue.

Deficit or other reverse items.

NET INCOME OF LARGE STEAM RAILWAYS WITH ANNUAL OPERATING REVENUES ABOVE \$25,000,000

(Switching and Terminal Companies Not Included)

Name of Railway	Net income after deprec.		Net income before deprec.	
	For the seven months of 1939	1938	For the seven months of 1939	1938
Alton R. R.	\$963,301	\$1,214,427	\$813,489	\$1,014,996
Atchison, Topeka & Santa Fe Ry. System	1,321,806	1,276,745	8,217,558	8,241,544
Atlantic Coast Line R. R.	159,897	505,148	1,378,866	701,671
Baltimore & Ohio R. R.	6,370,938	12,241,526	2,183,706	7,971,812
Boston & Maine R. R.	619,769	2,785,369	284,192	1,843,157
Central of Georgia Ry.	1,718,869	2,042,178	1,222,084	1,543,387
Central R. R. of New Jersey	2,434,838	2,234,311	1,617,371	1,408,486
Chesapeake & Ohio Ry.	8,987,698	7,569,940	13,800,503	12,412,937
Chicago & Eastern Illinois Ry.	1,176,047	1,333,830	829,564	980,301
Chicago & North Western Ry.	10,056,426	12,188,489	7,167,000	9,231,669
Chicago, Burlington & Quincy R. R.	1,314,814	1,433,233	1,724,142	1,518,875
Chicago Great Western R. R.	560,928	1,397,785	247,523	1,084,248
Chicago, Milwaukee, St. Paul & Pacific R. R.	13,083,980	13,790,634	9,709,118	10,448,390
Chicago, Rock Island & Pacific Ry.	5,903,515	8,118,792	3,511,506	5,671,241
Chicago, St. Paul, Minneapolis & Omaha Ry.	2,263,138	1,966,461	1,924,714	1,623,257
Delaware & Hudson R. R.	505,841	927,380	1,097,236	316,314
Delaware, Lackawanna & Western R. R.	1,241,144	2,833,596	181,144	1,391,206
Denver & Rio Grande Western R. R.	3,881,010	4,700,461	3,175,876	3,982,833
Elgin, Joliet & Eastern Ry.	520,882	616,140	1,078,171	31,407
Erie R. R. (including Chicago & Erie R. R.)	3,194,009	8,332,326	1,049,937	6,144,205
Grand Trunk Western R. R.	1,921,189	3,600,481	1,241,353	2,946,389
Great Northern Ry.	2,989,486	7,211,975	840,041	5,041,154
Illinois Central R. R.	1,716,047	1,925,299	2,120,646	1,861,988
Lehigh Valley R. R.	957,511	2,446,037	277,385	1,178,255
Long Island, R. R.	1,253,855	1,191,435	567,287	505,271
Louisville & Nashville R. R.	1,991,220	876,926	4,518,511	1,650,346
Minneapolis, St. Paul & Sault Ste. Marie Ry.	4,557,787	4,515,833	3,846,394	3,798,352
Missouri-Kansas-Texas Lines	2,153,128	2,624,651	1,373,478	1,852,471
Missouri Pacific R. R.	9,243,129	9,990,934	6,700,155	7,436,186
New York Central R. R.	9,242,920	19,636,506	5,276	10,250,597
New York, Chicago & St. Louis R. R.	149,829	2,003,779	764,984	1,007,946
New York, New Haven & Hartford R. R.	3,553,227	7,649,849	1,582,474	5,670,451
Norfolk & Western Ry.	11,416,421	6,409,381	14,357,657	9,317,841
Northern Pacific Ry.	5,688,829	7,921,065	3,715,592	5,942,270
Pennsylvania R. R.	5,303,813	2,295,375	20,706,502	12,441,812
Pere Marquette Ry.	892,707	2,551,202	487,485	1,150,508
Pittsburgh & Lake Erie R. R.	755,512	392,523	2,063,730	1,702,550
Reading Co.	1,633,623	429,284	3,448,378	2,260,074
St. Louis-San Francisco Ry.	6,549,640	8,009,123	4,758,409	6,186,191
St. Louis Southwestern Lines	1,555,484	1,135,541	1,194,869	772,878
Seaboard Air Line Ry.	3,681,316	4,454,252	2,425,497	3,263,850
Southern Ry.	153,986	4,115,477	2,171,452	2,325,217
Southern Pacific Transportation System	2,056,136	11,612,034	2,533,973	6,778,750
Texas & Pacific Ry.	28,807	228,486	671,922	925,659
Union Pacific R. R. (including leased lines)	3,878,707	3,827,361	8,183,774	8,091,683
Wabash Ry.	3,448,323	4,557,487	2,195,874	3,302,383
Yazoo & Mississippi Valley R. R.	560,140	345,196	283,141	32,267

* Deficit.

† Report of receiver or receivers.

‡ Report of trustee or trustees.

§ Under trusteeship, Erie R. R. only.

|| Report includes Chicago, Rock Island & Gulf Ry. beginning with June 1939.

¶ Includes Atchison, Topeka & Santa Fe Ry., Gulf, Colorado & Santa Fe Ry., and Panhandle & Santa Fe Ry.

† Includes Boston & Albany, lessor to New York Central R. R.

|| Includes Southern Pacific Company, Texas & New Orleans R. R., and leased lines. The report contains the following information: "Figures reported above for Southern Pacific Transportation System exclude offsetting debits and credits for rent for leased roads and equipment, and bond interest, between companies included therein. Operations for 1939 of separately operated solely controlled affiliated companies (not included in above statement), resulted in a net deficit of \$449,772 for the month and \$3,732,068 for the period. These results include \$211,172 for the month and \$1,478,205 for the period, representing interest on bonds of such companies owned by Southern Pacific Company not taken into income by Southern Pacific Company, and therefore, not included in the 1939 income results for the system reported above. The combined results for 1939 for Southern Pacific Transportation System and separately operated solely controlled affiliated companies for the month amounted to a net income of \$751,650 and for the period a net deficit of \$4,309,999.

statement and that showing the net incomes or net deficits of roads having operating revenues above \$25,000,000 are given in the accompanying tables.

Reduced "All-Freight" Rate Between New York and Boston

The Interstate Commerce Commission, Division 3, has found justified suspended schedules wherein the New York, New Haven & Hartford is proposing to reduce its all-commodity rate while increasing the applicable carload minimum between New York and Boston, Mass. The decision vacates the suspension order on the tariffs originally filed to become effective June 23 but suspended until January 23, 1940, upon protests, "principally by motor-carrier interests in New England." The cut in the all-commodity rate involved is from 33 cents per 100 lb. to 25 cents with an increase in the carload minimum from 24,000 lb. to 30,000 lb.

Commissioner Alldredge dissented, expressing the view that the rate violates

section 1 (6) of the Interstate Commerce Act which requires "the establishment, observance, and enforcement of just and reasonable classifications of property for transportation." He cannot believe that the New Haven proposal represents "a just and reasonable classification of freight," since in his opinion "neither the nomenclature employed to designate a rate nor the exigency of competition is sufficient to obviate the necessity of conforming to reasonable classification standards."

\$23,741,297 Pension Taxes During September

The United States Treasury during September collected \$23,741,297 in pension-act taxes upon carriers and their employees, bringing the total collected in the first three months of the present fiscal year to \$28,884,074, according to the "Weekly Review" of the Railroad Retirement Board for October 7. It is pointed out that these collections apply largely to taxes on compensation paid in the last quarter of 1938-39.

Total collections from the beginning of operation to the end of September amounted to \$288,676,346.

A total of \$7,150,000 was transferred to the Railroad Retirement Account during September. The total amount transferred from the Treasury during the first quarter of the new fiscal year 1940 amounted to \$47,150,000.

A. S. M. E. Elects New Officers

The American Society of Mechanical Engineers announces the following new officers for 1940 elected by a letter ballot of the entire organization of 15,000: President, W. H. McBryde, consulting engineer, San Francisco, Cal.; Vice-Presidents, K. H. Condit, executive assistant to the president, National Industrial Conference Board, New York; Francis Hodgkinson, retired consulting mechanical engineer, Westinghouse Electric & Manufacturing Co., New York; J. C. Hunsaker, aeronautical engineer, Cambridge, Mass., and K. M. Irwin, assistant to vice-president, Philadelphia Electric Company, Philadelphia, Pa. Managers, J. W. Eshelman, sales engineer, Birmingham, Ala.; Linn Helander, professor of mechanical engineering, Kansas State College, Manhattan, Kansas; and G. T. Shoemaker, president, United Light & Power Service Company, Chicago.

"Fam" Activities

The Delaware, Lackawanna & Western and the Lehigh & New England will operate a "safari" for railroad and camera enthusiasts on October 22 out of New York. The itinerary covers the main line of the Lackawanna to Portland, Pa., thence the Bangor & Portland division to Bath, thence via the Lehigh & New England to Portland and return via the Lackawanna cut off. An hour stop will be made at Pen Argyl for inspection of locomotive facilities.

The Railroadians of America will hold a luncheon on the lawn of the railroad exhibit building at the New York World's Fair on October 15. Members and guests will be admitted to the exhibit one hour before the public in order to take photographs. As a finale members will ride across the stage in the pageant "Railroads on Parade."

Defers Some Liberalizing Changes in Demurrage Rules

Because the general business situation has "changed appreciably," bringing "a marked increased demand for equipment," the Car Service Division of the Association of American Railroads has decided to withhold certain of the liberalizing amendments to the Demurrage and Storage Rules which were announced in a statement issued August 15, as noted in the *Railway Age* of August 19, page 295. It was the original plan to make the amendments effective October 1, but delays in securing approvals of State commissions caused a postponement to November 1 when the tariff publishing the changes not withheld will become effective.

The modifications which were withheld are: The proposed elimination of the charge from Sundays and legal holidays now made after the fourth day under the

average agreement; the proposed increase in free time when cars are loaded to twice or more than twice the minimum weight; and the proposed reduction of the penalty rate from \$5.50 to \$3.30.

Car Foremen's Association Elects Officers

At the annual meeting of the Car Foremen's Association of Chicago, held at the La Salle Hotel, on October 7, the following officers were elected for the ensuing year: President, W. J. Healion, superintendent, North American Car Corporation, Blue Island, Ill.; first vice-president, C. A. Erickson, general A. A. R. inspector, Chicago & North Western, Chicago; second vice-president, W. A. Emerson, general master car builder, Elgin, Joliet & Eastern, Joliet, Ill.; treasurer, C. J. Nelson, superintendent of interchange, The Chicago Car Interchange Bureau, Chicago; secretary, Geo. K. Oliver, assistant passenger car foreman, Baltimore & Ohio Chicago Terminal, Chicago.

By virtue of his election to the presidency, Mr. Healion becomes chairman of the Board of Directors. The only other change in the board was the replacement of Mr. Emerson, who was elected vice-president, by Phil Baker, master mechanic,

Belt Railway Company of Chicago, Chicago.

Claim Payments Down

Claims paid by the railroads of the United States and Canada as a result of loss and damage to freight shipments were 21.5 per cent less in the first half of 1939 than they were in the same period of 1938 and 22.2 per cent below the same period of 1937, according to the Freight Claim Division of the Association of American Railroads. The amount paid as a result of such claims in the first six months of 1939 totaled \$9,185,333, a reduction of \$2,512,944 compared with the first half of 1938 and \$2,611,062 compared with the first half of 1937.

Claims for loss and damage paid by the railroads of the United States and Canada in the first six months of 1939 amounted to 61/100 of one cent for each dollar of freight revenue received in that period, compared with 87/100 of one cent for the same period of 1938 and 67/100 of one cent for the same period of 1937.

For the twelve months' period ended with June, 1939, loss and damage claims paid by the railroads totaled \$19,049,811 compared with \$24,283,701 for the preceding twelve months' period, or a decrease

of 21.6 per cent. For the same period ended with June, 1937, loss and damage claims paid by the railroads amounted to \$23,353,850, those for the twelve months ended with June, 1939, being 18.4 per cent less.

Calling Canadian Box Cars

Indications of "increasing diversion and misuse of Canadian ownership cars, principally box cars," has prompted the Association of American Railroads Car Service Division to issue a circular stipulating that all railroads should have in effect on their lines "positive instructions requiring the proper handling of these Canadian ownerships."

"The Canadian lines," the circular says, "are experiencing the same heavy increase in demands for movement of all commodities as are the American railroads. In addition their fall movement of wheat from the Western provinces is not more than half disposed of and their car requirements are therefore exceedingly heavy." Previously, the circular, after noting that loading of Canadian cars strictly in accordance with the Car Service Rules and in the direction of the home roads is permitted and recognized as proper use under the customs regulations, called "particular

Some Bell Telephone Policies in Which the Management Takes Pride

"Besides this technical development [i.e., of the telephone] in which we are recognized as having led the world, there are other achievements in which we have pioneered and which, in my opinion, have been of great importance to the general welfare of our country. . . .

"One example of this sort of pioneering is the **depreciation accounting** of the Bell System. It would be difficult to overestimate the effect of the adoption years ago of a fixed depreciation charge to expenses which had to be charged in good times and bad before arriving at net earnings available for dividends. This has been of great importance in the maintenance of the financial integrity of the Bell System and in the rapidity with which new and improved methods have been adopted and obsolete plant has been abandoned. Thus it is interesting to note how what seems to be mere bookkeeping can be of vital consequence not only to investors but to people who use the telephone. . . .

"We pioneered again in having **research and development** carried on in a central organization. This insured progress in spite of the fact that competition in the usual sense of the word—such competition which is assumed to be essential to progress—has been largely absent. In many ways this organization of scientists, engineers, accountants and experts in management and operating methods has been and remains unique. It has been recognized as a most important factor in the success of the telephone business from the standpoint of those employed in it, those who have invested in it and the public who use the telephone. Commissioner Eastman of the Interstate Commerce Commission, a few years ago said that he would like to see a central scientific, engineering and economic research department acting for all the railroads along lines similar to that of the Bell System.

"It is not without importance, either, that we were pioneers in that form of advertising which has come to be known as **'institutional' advertising** and that this advertising has been uninterrupted since its inception in 1908. In such

advertising, it has been natural to emphasize the contributions to the service of the System's men and women and you are all familiar with the advertisements, 'Weavers of Speech,' featuring the operator, and 'The Spirit of Service,' portraying the lineman working in a blizzard.

"Also, I believe it is fair to say that we were pioneers in **courtesy in business**. The 'voice with the smile,' the 'number, please,' and the spirit of service that inspires all telephone men and women have been notable characteristics of the telephone business for decades. It is, in fact, important not only to the satisfaction of customers but in its reaction on the employee himself or herself. It would be interesting if one could evaluate the effect of the habit of being courteous under all conditions on the character, self-restraint, and likeableness of the individual and on the satisfaction and pleasure he gets from his job. But it is only men and women of high quality and genuine devotion to the business who can establish and maintain the reputation which I believe the System has for courteous and outstanding service to the public.

"One hears a good deal about the recognition on the part of business—big business especially—of its social obligations. Apparently for many, this seems a new idea. We know that in our business such **recognition of social obligations** goes back many years. At a time when other businesses were booming, stock split-ups and extra dividends were almost the order of the day, we stated definitely for the Bell System that either earnings in excess of those needed to assure the financial integrity of the business must be spent for the enlargement and improvement of the service or the rates must be reduced. That obligation which includes fair treatment of employees has been and will continue to be strictly lived up to. The interrelation of the employee, the stockholder and the public and the rights of each have long been recognized by us, and we are, in my opinion, justified in feeling we were pioneers in recognizing the social responsibilities of business in a democracy."

Extracts from an address by President W. S. Gifford of the A. T. & T. Co. at a meeting of "Telephone Pioneers," New York, September 22.



639,394 ANSWERS to the Comfort Question

The only practical way the traveling public can show its acceptance of the railroad's efforts to increase comfort is by its continued patronage. That the Southern Pacific's Daylight has appealed to the public's tastes is clearly demonstrated by the above figure.

This ultra-modern, streamlined train which runs between San Francisco and Los Angeles has been in operation since March 21, 1937, and by June 30, 1939 had handled 639,394 passengers on the first section alone.

Modern, streamlined locomotives are an integral part of the comfort campaign of the Southern Pacific. The locomotives that power the Daylight are built by Lima and are another profit producing example of Lima's skill in design and construction.

LIMA LOCOMOTIVE WORKS,



INCORPORATED, LIMA, OHIO

attention" to the fact that "any other use of these cars is not only contrary to the Car Service Rules but is also a violation of the federal customs laws."

Freight Car Loading

Loading of revenue freight for the week ended October 7, totaled 834,694 cars, the Association of American Railroads announced on October 12. This was an increase of 54 cars above the preceding week, an increase of 132,078 cars, or 18.8 per cent, above the corresponding week in 1938, and an increase of 22,436 cars, or 2.8 per cent, above the same week in 1937.

As reported in last week's issue, the loadings for the previous week ended September 30, totaled 834,640 cars, and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loadings			
For Week Ended Saturday, September 30			
Districts	1939	1938	1937
Eastern	169,844	137,287	170,120
Allegheny	168,799	128,395	161,834
Pocahontas	62,747	51,249	56,931
Southern	114,952	106,316	118,168
Northwestern ..	133,440	101,824	135,722
Central Western	123,935	113,575	132,061
Southwestern ..	60,923	58,262	69,025
Total Western Districts	318,298	273,661	336,808
Total All Roads	834,640	696,908	843,861
Commodities			
Grain and grain products	45,370	41,581	36,314
Live stock	20,252	17,205	21,791
Coal	168,957	131,492	163,848
Coke	11,038	6,415	10,304
Forest products.	37,116	32,405	38,418
Ore	60,391	29,182	62,299
Merchandise l.c.l.	162,404	157,991	174,695
Miscellaneous ..	329,112	280,637	336,192
September 30 ..	834,640	696,908	843,861
September 23 ..	814,828	669,704	836,885
September 16 ..	805,733	660,163	822,795
September 9 ..	667,409	568,707	708,202
September 2 ...	721,748	648,029	801,539

Cumulative Total,
39 Weeks ... 24,425,667 22,139,155 29,145,950

In Canada.—Carloadings for the week ended September 30 totaled 68,882, as compared with 72,157 in the previous week and 61,867 a year ago, according to the weekly statement of the Dominion Bureau of Statistics. Congestion at western elevators was a factor in reducing grain loading, accounting for most of the decline from the preceding week.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
Sept. 30, 1939.....	68,882	30,476
Sept. 23, 1939.....	72,157	28,490
Sept. 16, 1939.....	71,274	26,852
Oct. 1, 1938.....	61,867	25,560
Cumulative Totals for Canada:		
Sept. 30, 1939.....	1,830,473	856,946
Oct. 1, 1938.....	1,787,560	785,165
Oct. 2, 1937.....	1,949,387	1,033,411

R. E. A. Cuts Rates for Bulk Oyster Shipments

Reduced rates for shipments on shucked oysters, clams and scallops in consignments of 20 gal. and less than 40 gal. and still greater reductions for quantities of 40 gal. or more, applying from shipping points in 14 states along the Eastern seaboard to destinations as far west as the Rocky mountains, were made effective by the Railway Express Agency on October 2. To illustrate the reduction under the new rates: from Baltimore, Md., to Dallas, Tex., shipments up to but not including

20 gal. will be rated at \$3.87 per 100 lb.; from 20 to 39 gal., the rate will be \$3.52; and for 40 gal. and upward, \$3.17. These three rates are respectively 55, 50 and 45 per cent of the regular first-class express rates. Under the old schedules applying last season the rate for the same haul was \$3.82 up to 50 gal. and \$3.20 for upwards of that quantity.

Changes in Organization of I. C. C. Work

Several changes in the organization of the Interstate Commerce Commission's work were announced in an August 9 notice by Secretary W. P. Bartel. Under the new set-up the Bureau of Valuation will report to Commissioner Miller instead of Commissioner Lee; the Bureau of Informal Cases will report to Commissioner Lee instead of Commissioner Caskie; the Bureau of Safety and Locomotive Inspection will report to Commissioner Patterson instead of Commissioner Miller; and Commissioner Patterson has been made a member of Division 3 in lieu of Commissioner Miller.

Under the I. C. C.'s internal reorganization plan which became effective in July, as reported in the *Railway Age* of June 17, page 1024, Division 3 is the one which administers the Safety Appliance and related acts, such as Locomotive Inspection, Transportation of Explosives; emergency directions as to car service; pooling of traffic; and the classification of railroad employees under the Railroad Retirement Act and the Railroad Unemployment Insurance Act.

Losses from Freight Thefts Down 24 Per Cent

Claims paid by the railroads of the United States and Canada for loss of freight due to theft were 24 per cent less in the first six months of 1939 than in the corresponding period of 1938 and 20 per cent less than in the corresponding period of 1937, the Freight Claim Division of the Association of American Railroads announced on October 11. Claims resulting from theft paid by those railroads in the first half of 1939 amounted to \$240,591, a reduction of \$75,588 compared with the first half of 1938 and a reduction of \$61,923 compared with the same period of 1937.

"This reduction in robbery losses," the Freight Claim Division statement says, "has resulted in part from increased vigilance on the part of railroad police departments in protecting freight shipments not only on trains moving through congested sections of the country, but also when such shipments are in cars in railroad yards. Improved methods of packing freight shipments by shippers also has contributed to the reduction in such claims."

September Employment 5.77 Per Cent Above Last Year

Railroad employment increased another 1.44 per cent—from 1,004,619 to 1,019,063—during the one-month period from mid-August to mid-September, according to the Interstate Commerce Commission's compilation based on preliminary reports. The increase as compared with September, 1938, was 5.77 per cent, while the index number,

based on the 1923-25 average as 100 and corrected for seasonal variation, stood at 55.9 as compared with 54.9 in August and 52.9 in September 1st year. The indexes for August and September have been the highest since January, 1938's 56.

As was expected from recent reports of activity in equipment-repair work, the maintenance of equipment and stores forces, up 9.98 per cent, led the increases over September, 1938; although the train and engine service group, up 3.18 per cent, reflected the highest rise over the mid-August figures. Mid-September maintenance of equipment and stores forces were 2.79 per cent larger than those of mid-August. Maintenance of way and structures forces, down 0.89 per cent as compared with August, were up 6.27 per cent from September last year.

The only other decrease under August was the 0.13 per cent drop reported for the transportation group embracing yardmasters, switch-tenders and hostlers, which was up 2.62 per cent as compared with September, 1938. Only one decrease under September, 1938, was reported, the group embracing executives, officials and staff assistants (up one tenth of one per cent from August) being off 0.41 per cent.

Competitive Reductions of Sand and Gravel Rates in Chicago Area

The Interstate Commerce Commission has modified findings of previous reports so as to permit railroads to establish and maintain reduced rates on sand, gravel, crushed stone, and slag, in carloads, from origins in zones I, II and III in Wisconsin, Illinois and Indiana to the Chicago-Gary, Ind., district. Another finding permits the establishment of reduced rates on sand, gravel and crushed stone, in carloads, from origins in Illinois and Indiana to destinations in northwestern Indiana, in particular instances to meet truck and water competition under the so-called co-operative procedure.

The latter, the report explains, is a plan devised by shippers and carriers under the sponsorship of the Illinois Commerce Commission whereby intrastate rates to meet truck and water competition are published to take care of particular movements in short-notice tariffs with expiration dates. "We have," says the I. C. C., "cooperated in the operation of this procedure by expediting action on applications filed in pursuance thereof. However, it should be pointed out that this commission does not and cannot bind itself in advance as to the action it will take on a given application. Each must be decided on its merits." In the present cases, the commission goes on to say, the competition of the truck-borne and water-borne materials "is actual and compelling" and thus the reduced rates proposed by the railroads "would not be unreasonably low and no lower than is necessary to meet the competition."

Auto Rate Hearings

Eastern hearings in connection with the Interstate Commerce Commission's No. 28,190 investigation of freight rates on new automobiles were announced in a notice issued October 5 by I. C. C. Secretary

W. P. Bartel. The schedule calls for hearings in the Hotel Lenox, Boston, Mass., on October 20; office of the Public Utilities Commission, Harrisburg, Pa., on October 27; office of the I. C. C., Washington, D. C., on October 30; and Hotel Netherland Plaza, Cincinnati, Ohio, on November 10.

The notice says that the hearings will be "particularly for the purpose of hearing evidence respecting the advantages and disadvantages from the consignee's standpoint of the services of the several agencies of transportation, including the cost to the consignee of unloading railroad cars and bringing the automobiles to the consignee's premises, together with all other considerations which the consignee takes into account in determining which agency of transportation to use in individual instances for this traffic."

Meanwhile the hearing now assigned for November 14 at Detroit, Mich., "will proceed as set," while "similar hearings may be held later in the South and West."

Rail Industry Committee Under Wages and Hours Law

Administrator Andrews of the Wages and Hours Division of the Department of Labor has announced that an order is being prepared for the creation of a railroad industry committee to function under the Fair Labor Standards Act. Railroads, exempt from the maximum hours provisions of this act, are subject to the minimum wage provisions.

The purpose of an industry committee is to consider the question of increasing an industry's minimum wage above the statutory minimum (but not above 40 cents an hour), and to make recommendations in that connection to the Administrator. The railroad industry committee, consisting of representatives of the carriers, their employees and one member representing the public, will be appointed by the Administrator who will select the carrier and employee representatives from nominees of management and labor, respectively.

Maintenance of way workers are about the only railroaders affected by the act under which the minimum wage, having been 25 cents an hour, increases to 30 cents this month and finally reaches a maximum of 40 cents in 1945.

New York Central Completes Second "Mercury"

The New York Central has completed the construction of a second "Mercury" train at its Beech Grove shops, and will place the train in service between Chicago and Detroit early in November after it has been exhibited at Indianapolis, Chicago, Detroit and other cities (the public showing began on October 10). The present Mercury, placed in service between Cleveland and Detroit in 1936, will be continued in that service.

The new train will consist of a Hudson type passenger locomotive, painted in the Mercury's dark gray color scheme, and 11 cars, including a baggage car, six coaches, a dining car, a kitchen car, a lounge car and a parlor observation car. Although lighter than standard cars, they

are full size and combine beauty with comfort and utility. The coaches have spacious vestibules, that are semi-circular and warmly colored and which make entrance and exit into the car with baggage much easier. Each coach has a smoking lounge for the use of both men and women passengers. Floors, walls and ceilings of the cars are insulated, while the trucks are equipped with roller bearings.

Dining facilities take up the entire dining car, which seats 56 persons, while the kitchen is in an adjoining car. The former is divided by glass partitions into three dining rooms, the center room having banquet seats along the sides. A waiting room, seating six, at one end is another feature of this car. An electric eye operates the head-end door leading into the kitchen car.

The lounge car has a semi-circular service bar, located midway in the car. The parlor observation car has a solarium with leather seats facing outward.

1938 Taxes-to-Net Ratio Was Highest Since 1920

Class I railroads of the United States in 1938 paid in taxes to the various federal, state and local governments 40.41 cents out of each dollar of net earnings, the highest ratio for any year since 1920, according to the Association of American Railroads. In 1937 they paid 31.10 cents per dollar and in 1936, 28.52 cents.

Out of each dollar of operating revenue, the railroads in 1938 paid in taxes 9.5 cents, the greatest amount for any year on record. In 1937, they paid 7.8 cents and in 1936, 7.9 cents. Railway taxes now average nearly \$1,000,000 per day.

Total taxes paid in 1938 to federal, state and local governments by the Class I roads and their non-operating common-carrier subsidiaries amounted to \$343,193,790, the greatest amount for any year since 1930 when their tax bill amounted to \$350,042,367. Railway taxes in 1938 were an increase of \$13,792,836 compared with 1937 and an increase of \$20,802,158 compared with 1936.

Of the total amount of taxes paid in 1938, \$264,934,917 or 77.2 per cent went to state and local governments and \$77,422,886 was paid to the federal government. The remaining \$835,987 was paid in taxes to Canada, Mexico, Cuba and Hawaii. The amount of taxes paid to the state and local governments by the Class I carriers in 1938 was an increase of \$12,633,651 compared with 1937 and an increase of \$37,668,455 compared with 1936. The taxes paid to the federal government, for the most part, represent income taxes for corporations and payroll taxes. The principal taxes paid to state and local governments are assessed on roadway and other property.

First-Quarter Reports of Class I Bus Companies

Class I intercity bus carriers reported a composite net operating revenue of \$325,167 for the first quarter of this year as compared with \$209,906 for the three months ended March 31, 1938, according to a compilation issued this week by the Interstate Commerce Commission's Bureau of Statistics. These figures reflect the op-

erating results of 144 intercity bus operators who reported for this year's first three months total operating revenues of \$23,141,724 and total operating expenses of \$22,816,557, increases respectively of 7.8 per cent and 7.3 per cent over comparable figures for the first quarter of the previous year.

The breakdown of the figures by regions shows that deficits for the first quarter of this year were reported for five of the nine groups, the largest being the composite net loss of \$403,977 shown for the seven carriers comprising the Mid Western Region group. Meanwhile the 22 carriers comprising the Southern Region group reported a composite net operating revenue of \$689,323 as compared with \$942,165 in the first quarter of 1938. The 27 reporting carriers of the Central Region had net operating revenues of \$56,264 as compared with an operating deficit of \$160,308 for the previous year's first quarter.

The separate data on local or suburban carriers shows that the 42 Class I bus operators in this category (i.e., with an annual average revenue per passenger carried of less than 20 cents) reported composite net operating revenues of \$208,133 for this year's first quarter as compared with \$58,174 for the corresponding 1938 period. Their total gross was \$3,874,178 with operating expenses of \$3,666,045—up seven per cent and 2.9 per cent, respectively, from the first quarter of the previous year.

Monopoly Committee Witness Criticizes Railroads

The Temporary National Economic Committee, commonly known as the Monopoly Committee, in executive session on October 6, voted to have its executive secretary investigate the authenticity of a letter read into the record during the previous day's hearings on the petroleum industry by Eugene L. Orvis, a traffic consultant of Jersey City, N. J., purporting to show that J. J. Pelley, president of the Association of American Railroads, attempted to reach an agreement with certain large oil companies to stimulate rail shipments of gasoline from the southeast. Mr. Pelley, in a formal statement issued on October 5, stated that he had written such a memorandum but that the plan referred to had never been consummated.

"I have not seen the complete statement submitted today to the Temporary National Economic Committee by Eugene L. Orvis," Mr. Pelley said, "but his reference to letters from me to several oil company executives leads me to believe that it refers to efforts made by the A. A. R. early in 1935 to bring back to the rails a large volume of gasoline which had previously been carried by rail and was then being transported in motor trucks over the public highways. Those letters related to proposed arrangements looking toward that end which had previously been suggested by us to each of several oil companies for their consideration. The arrangements proposed, had they been consummated, would have become effective on May 1, 1935. They were not consummated however, and were never put into effect."

Mr. Orvis laid before the committee

Continued on second left-hand page

THE TRINITY

THAT INSURES PASSENGER COMFORT



All the luxury appointments that progressive railroads are incorporating in the modern streamliners to increase passenger comfort are wasted if the train starts with a jerk or pounds between engine and tender.

1. The Franklin Automatic Compensator and Snubber, by maintaining accurate adjustment of the driving box, eliminates irritating and expensive pounding. Roller bearing driving boxes, with their limited clearances, benefit particularly.

2. The Locomotive Booster* capitalizes idle weight and spare steam and gives the added power necessary for smooth acceleration and the tough spots on the road.

3. The Radial Buffer eliminates slack and pound between engine and tender, and decreases maintenance. This results in greater economy, greater safety, and increased passenger comfort.

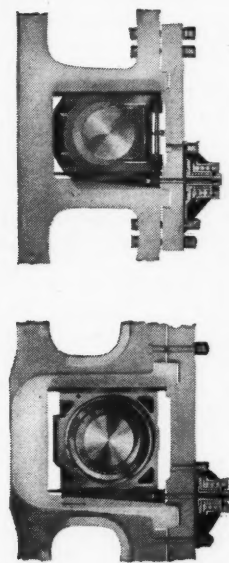
Don't waste the luxurious appointments that have been installed for passengers' comfort . . . protect them with Franklin Devices.



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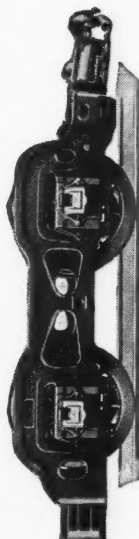
FRANKLIN RAILWAY SUPPLY COMPANY, INC.

1



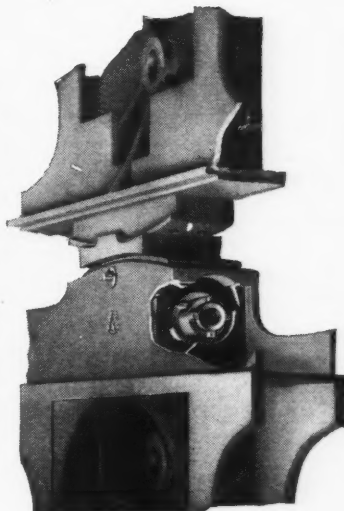
LEFT: Franklin Automatic Compensator and Snubber for Roller Bearing Driving Box application. RIGHT: Franklin Automatic Compensator and Snubber for Friction Bearing Driving Box application.

2



The Locomotive Booster.
*Trademark Registered United States Patent Office

3



Franklin Type E-2 Radial Buffer dampens oscillation between engine and tender and makes for easier riding.

charges of an agreement between the A. A. R. and 13 major oil companies, under which the railroads would cease the leasing of property for gasoline filling stations, provided that the oil companies would suspend the shipment of gasoline by truck. He went on to contend that the proposed arrangement could injure, if not destroy, the business of all independent oil dealers and all those engaged in the trucking of petroleum products in the entire southeastern portion of the U. S.

Seek Postponement of Senate Forwarder Probe

Five railroad executives last week called on Chairman Wheeler of the Senate committee on interstate commerce and Senator Reed, Republican, of Kansas, a member of the committee, in an effort to obtain a postponement of the committee's investigation of railroad methods of handling forwarder, l. c. l. and express traffic. The investigation, called for in Senate Resolution 146, is tentatively scheduled to get under way late in November with public hearings before a sub-committee comprised of Senators Wheeler and Reed and Senator Hill, Democrat of Alabama.

In the railroad group calling upon the senators were J. J. Pelley, president of the Association of American Railroads; M. W. Clement, president of the Pennsylvania; E. E. Norris, president of the Southern; R. V. Fletcher, vice-president and general counsel of the A. A. R.; and A. F. Cleveland, A. A. R. vice-president in charge of its Traffic department. They are understood to have pointed out that the investigation would take important operating officers from their work at a time when they were needed to direct the handling of increased traffic; also they cited the I. C. C.'s pending investigations in Dockets 28300 and 28310, the general class rates and classifications probes.

Senator Reed, to whom the executives were referred by Chairman Wheeler, said that the reasons given for the postponement were unconvincing to him, but that he would discuss the matter with Senator Wheeler. He thought the investigation should begin about November 25, and he had not conferred with the committee chairman on the suggested postponement when this issue went to press.

Neither Senator Wheeler nor Senator Reed expect action at the special session on S. 2009, the general transportation bill which was left in conference when the last session adjourned. However, some preliminary work may be done on a conference report reconciling Senate and House versions, which it is planned to submit at the next regular session in January.

Midwest Board Meeting

Carloadings totaling 850,000 cars a week were anticipated by L. M. Betts, manager of the Closed Car section of the Car Service division of the Association of American Railroads, at a meeting of the Midwest Shippers Advisory Board at Springfield, Ill., on October 5. Raising of the embargo on munitions, he continued, will materially increase business, but there will be no immediate upturn until December or January or February. Citing the carload-

ing rise in the week ended September 30 to 834,640 cars, which was an increase of 19.8 per cent over the same period a year ago, and 2.4 per cent over the preceding week, Mr. Betts said that freight traffic since Labor Day has been unprecedented. "Never has there been such an increase in volume and intensity," he said. "It is possible that carloadings will move up to 850,000 units. General industrial traffic has risen from three to five-fold since the start of the European war, although the increase is not to be held as surprising now, because it came at a time when invoices were low for the housewife, retailer, wholesaler, manufacturer and others."

"There was no intimation of such a rise and no one knew about it in advance, because everyone considered the possibility of war in Europe as a bearish thing. Then suddenly came a tremendous upsurge, due to the hysterical buying by housewives and others, to escape rising prices. Such buying now is subsiding, but at the same time, we are feeling the increasing purchases of the heavier commodities such as coal, iron and lumber."

Shippers in the midwest territory were dubious of the ability of the railroads to furnish cars if business continues to increase. Steel mills in the Chicago area are operating at increasing high levels, and expect to reach peak capacity by January 1. Grain processors and shippers are disturbed because there are not sufficient Class A cars available. Coal shippers are fearful of being unable to move a volume which is largely for domestic consumption and which, if swollen by foreign demands as a result of the war, will assume historical proportions.

Equipment Depreciation Orders

Equipment depreciation rates for nine railroads, including the Maine Central, the Missouri-Kansas-Texas and the Southern, are prescribed by the Interstate Commerce Commission in a new series of sub-orders and modifications of previous sub-orders in No. 15,100, Depreciation Charges of Steam Railroad Companies. The composite percentages, which are not prescribed rates, range from 2.69 per cent for the Copper Range to 3.68 per cent for the Smoky Mountain, the higher composite percentage of 6.21 per cent listed for the Beaver, Meade & Englewood being merely the prescribed rate for that road's freight cars, the only figure in the present modification of a previous sub-order applicable to the B. M. & E.

The Maine Central's composite percentage of 3.11 is derived from a variety of prescribed rates on equipment owned and leased. On equipment owned the prescribed rates are as follows: Steam locomotives, 2.98 per cent; other locomotives, 6.43 per cent; freight train cars, 2.74 per cent; passenger train cars, 2.54 per cent; work equipment, 3.46 per cent; miscellaneous equipment, 20 per cent. On equipment leased from the Portland & Rumford Falls: Steam locomotives, 4.12 per cent; freight train cars, 11.83 per cent; passenger train cars, 12.3 per cent; work equipment, 3.87 per cent. On equipment leased from the Portland & Ogdensburg: Steam locomotives, 8.01 per cent; freight train

cars, 13.8 per cent; passenger train cars, 14.15 per cent; work equipment, 6.04 per cent. On equipment leased from the European & North American: Steam locomotives, 8.84 per cent; freight train cars, 12.25 per cent; passenger train cars, 12.52 per cent; work equipment, 6.62 per cent.

The composite percentage for the M-K-T is 3.45 per cent, derived from prescribed rates as follows: Steam locomotives, 3.45 per cent; freight train cars, 3.26 per cent; passenger train cars (owned), 3.9 per cent; passenger train cars (leased), 3.15 per cent; work equipment, 4.04 per cent; miscellaneous equipment, 12.07 per cent. Prescribed rates for the Missouri-Kansas-Texas of Texas (composite percentage, 3.41) are as follows: Steam locomotives, 3.31 per cent; freight train cars, 4.93 per cent; passenger train cars (owned), 3.24 per cent; passenger train cars (leased), 3.7 per cent; work equipment (owned), 3.19 per cent; work equipment (leased), 4.2 per cent; miscellaneous equipment, 7.34 per cent.

The composite percentage for the Southern is 2.99 per cent, derived from prescribed rates as follows: Steam locomotives, 2.7 per cent; freight train cars, 3.25 per cent. Diesel-electric passenger-train equipment, 4.5 per cent; passenger-train equipment other than that in Diesel-electric trains, 2.5 per cent; floating equipment, 2.75 per cent; work equipment, 3.15 per cent; miscellaneous equipment, 8.04 per cent.

U. S. Supreme Court Passes Upon Railroad Cases

The United States Supreme Court at its second meeting during the present term on October 9, granted or denied appeal in several cases affecting railroad companies. By granting a petition for a writ of certiorari, the Court agreed to review the case of the General American Tank Car Corporation v. El Dorado Terminal Company, a suit by a shipper to recover from the Car Corporation, from which it leased specialized coiled tank cars for carriage of its products, the balance of mileage tariff rate collected by the Car Corporation from the railroad in excess of rentals and other charges. The lower court had held that the provision in the lease for crediting the shipper with collections from the railroad and payment over of the balance thereof after deducting the rental of car lease and repair charges did not constitute an illegal rebate in violation of the Elkins Act.

By denying petitions for writs of certiorari, the Court declined to review the following cases, thus leaving in effect the judgments of the lower courts:

1. Pitcairn, v. American Refrigerator Transit Company, a suit by the Wabash against a refrigerator car company and other railroads to determine the relationship between the car company and two railroads as owners of its capital stock, and to determine rights in the refrigerator car company's surplus.

2. California Fruit Growers Exchange v. New York, New Haven & Hartford, a suit by the railroad against a shipper to recover freight and refrigeration charges on an interstate shipment of fruit. The lower court had held that the shipper named in the bill of lading as both con-

signor and consignee is liable to the railroad for freight and refrigeration charges on interstate shipments, and is not entitled to recoup the amount of the charges as damages for the railroad's failure to comply with the shipper's orders to collect charges from another upon delivery, in view of the Interstate Commerce Act provisions against discrimination.

3. Galveston Truck Line Corporation v. Texas, a suit by the State of Texas on behalf of its Railroad Commission to restrain a motor carrier operating under a permit issued by the Interstate Commerce Commission from transporting over state highways, without the state's certificate of convenience and necessity, goods shipped from out-of-state points to a city within the state for storage, processing and assembling and then transported by the carrier to branch houses and retail distributors within the state. The Texas Court of Civil Appeals had held that the transportation was intrastate in character, and affirmed the judgment for the state.

Atlantic Board Offers Advice

(Continued from page 595)

given to such matters back in the early 'Twenties, the public has heard very little on the subject from railroad management since those years, despite the fact that individual roads privately complain that working agreements have become increasingly burdensome. He urged that both management and labor disclose all the facts concerning working agreements "in order that the public who pays all of the bills, may know whether they are battling over mountains or molehills." Of partnerships between railroad management and labor for movement in general increases in railroad rates the speaker commented that such partnerships make strange bedfellows and "it seems as if one of these bedfellows wakes up in the morning to find himself on a hard, cold floor."

Speaking from his experience with critics of the railroads, Mr. McGuigan recalled that some people "get very much worked up" over the fine operating showings reported by the federally-owned Inland Waterways Corporation and urge that the railroads in and west of the Mississippi Valley would fare better if they bought and used these barge lines instead of relying on eastern railroad connections. Commenting humorously on this view the speaker remarked that all too many of the western railroads have already followed Inland's example of not paying interest on the money which created them—but thus far they have been unable to emulate its example in dodging taxes and other actual working expenses. Discouraging briefly on railroad publicity the speaker expressed the opinion that the public is naturally interested in the railroads, citing the example of attendance at exhibits at the World's Fair and at the motion picture "Union Pacific." He added, however, "They are not interested in the flow of advertisements which discuss fuel consumption per unit of traffic and similar matters which are meaningless to laymen."

Supply Trade

Otto V. Kruse has been elected a member of the board of directors of the General Steel Castings Corporation, Eddystone, Pa. Mr. Kruse is general sales manager of the Baldwin Locomotive Works.

OBITUARY

W. A. Berger, sales engineer and eastern representative of W. H. Miner, Inc., with headquarters at Chicago, died in that city on October 4.

Equipment and Supplies

St. Louis Southwestern Program

The St. Louis Southwestern has asked the District court for permission to spend \$760,353, of which \$258,695 is for rails and \$501,658 is for materials to be used in the construction of 100 general service coal cars, six flat cars, and 12 automobile cars, and the rebuilding of 50 flat cars.

Burlington's New Equipment Program

The Chicago, Burlington & Quincy, reported in the *Railway Age* of September 30 as having been authorized by its directors to acquire locomotives and freight cars, is now asking for prices to determine whether the ten Mohawk 4-8-4 type locomotives, the 100 53½ ft. flat cars of 50 tons capacity and the 200 hopper cars of 55 tons capacity will be purchased or be built in company shops. The seven 2,000 hp. locomotive units which the Burlington will buy, will be streamlined and built of stainless steel. Six of the units will be operated in pairs on the Exposition Flyer and the Aristocrat, while the remaining unit will be held available for substitute duty on these trains and on the Denver and Twin Zephyrs.

LOCOMOTIVES

THE ST. LOUIS-SAN FRANCISCO will construct ten freight locomotives in its own shops in 1940, in addition to five that are now nearing completion.

FREIGHT CARS

THE TENNESSEE CENTRAL is inquiring for 100 hopper cars of 55 tons' capacity.

THE ST. LOUIS-SAN FRANCISCO will rebuild 1,500 freight cars during 1940.

THE NORTHERN PACIFIC will soon ask for bids on 1,800 freight cars.

THE LOUISVILLE & NASHVILLE has ordered 600 hopper cars from the American Car & Foundry Co., and 600 from

the Pullman-Standard Car Manufacturing Company, all of 50 tons' capacity.

THE UTAH COPPER COMPANY has ordered 100 ore cars of 100 tons' capacity from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of October 7, page 540.

THE LEHIGH VALLEY is inquiring for from 200 to 300 gondola cars of 70 tons' capacity and 52 ft. 6 in. long; also for 50 gondola cars of 70 tons' capacity and 65 ft. 6 in. long.

THE ST. LOUIS SOUTHWESTERN has ordered from the American Car & Foundry Co., 100 car sets of steel underframes and superstructures and fabricated steel parts for 40-ft. convertible ballast and coal cars. An order has also been placed for 56 steel underframes for flat cars of 40 tons' capacity and 42 ft. long.

THE ATCHISON, TOPEKA & SANTA FE has ordered 2,800 freight cars. The orders were placed as follows:

No.	Type	Capacity (tons)	Size	Builder
1800	Box	40	40 ft. 6 in.	Pullman-Standard
300	Refrig.	40	40 ft.	General American
100	Refrig.	50	50 ft.	General American
50	Refrig.	100	50 ft.	General American
100	Flat	70	60 ft.	General American
50	Gondola	70	65 ft.	General American
200	Ballast	70	40 ft.	Rodger Ballast
200	Gondola	50	50 ft.	American Car Fdy.

PASSENGER CARS

THE CHICAGO & NORTH WESTERN has been authorized by the federal district court to participate to the extent of \$700,000 in the purchase of two 14-car streamlined trains, which will cost \$3,270,000, and which will be placed in operation between Chicago and California. Both trains will be hauled by three locomotive units of 2,000 hp. each and will be built by the Electro-Motive Corporation. The 28 revenue cars comprising the train will be of light weight construction, and will be built by the Pullman-Standard Car Manufacturing Company. Of these 28 cars, 15 roomette double bedroom compartment, master bedroom and section cars will be owned by the Pullman Company, while 13 baggage, dining, coach and observation cars will be owned by the railroads.

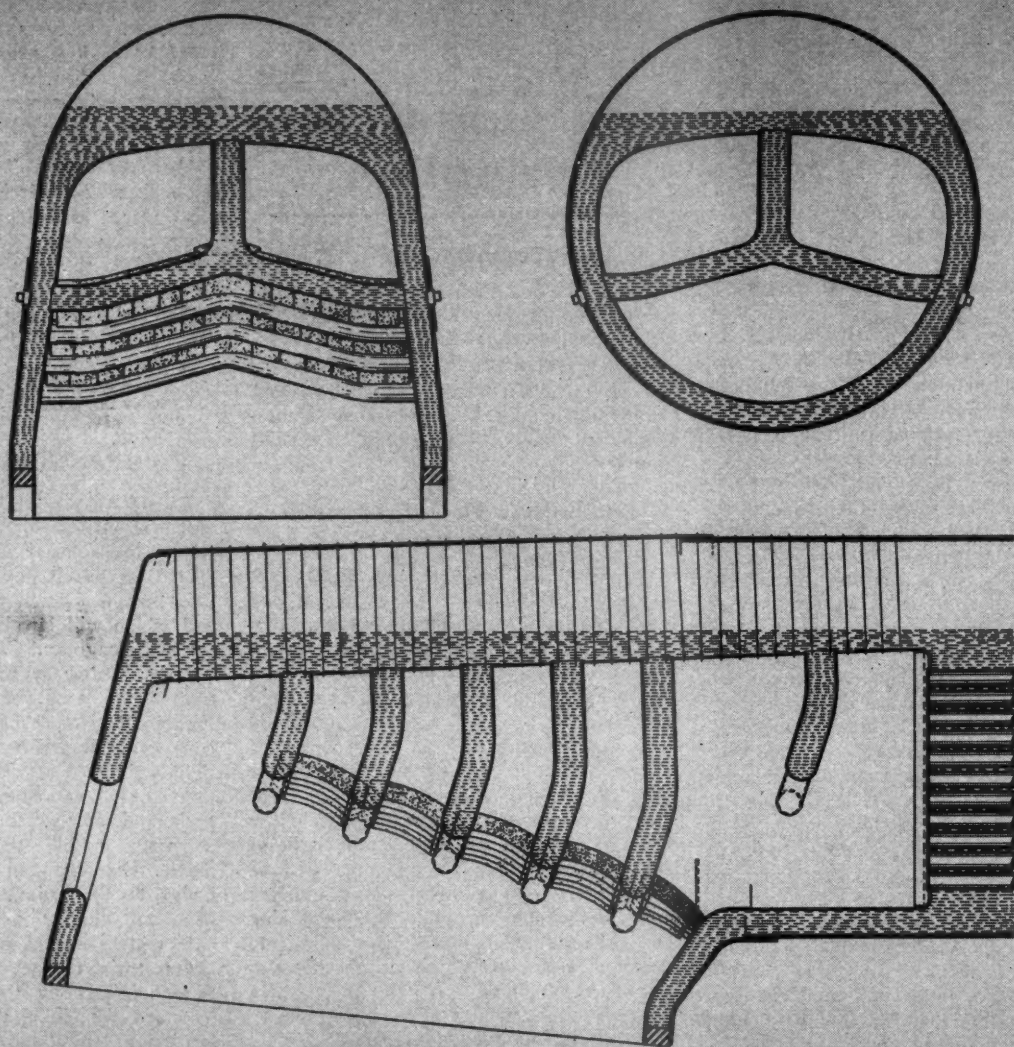
One train, the new Forty-Niner, will be owned jointly by the Chicago & North Western, the Union Pacific and the Southern Pacific, and will be operated between Chicago and San Francisco. The present equipment of this train will be used in other service. The new City of Los Angeles will be owned jointly by the Chicago & North Western and the Union Pacific, and will operate between Chicago and Los Angeles. The present equipment of this train will be used elsewhere.

IRON AND STEEL

THE SPOKANE, PORTLAND & SEATTLE has ordered 10,000 tons of rails from the Colorado Fuel & Iron Co.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 30,000 tons of rails, placing 22,500 tons with the Carnegie-Illinois Steel Corporation, and 7,500 tons with

2 $\frac{1}{4}$ MILLION MILES OF



**Improved Arch Support for the
largest fireboxes**

Adapted to any type of locomotive

**Reduced honeycombing flue plug-
ging and cinder cutting**

**Improved circulation in side water
legs**

Patented in United States and foreign
countries . . . Other patents pending.

AMERICAN

NEW YORK

CHICAGO

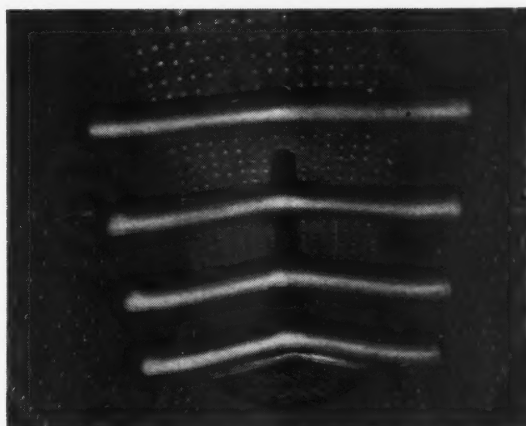
SUCCESSFUL OPERATION

... HAVE PROVED THE SECURITY CIRCULATOR

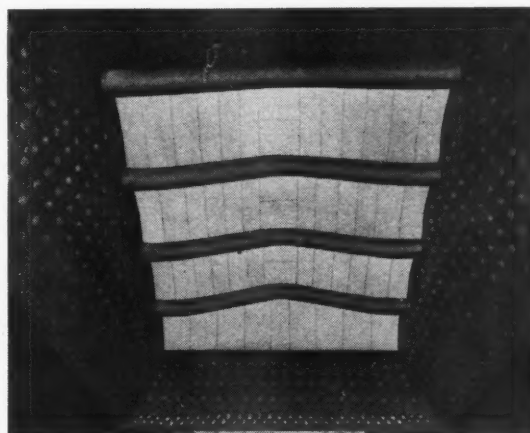
218 Security Circulators (157 of which were installed during the past 14 months) have been installed on 17 railroads, and have operated over 2¼ million locomotive miles in heavy, fast freight and passenger service.

Some of these Circulator-equipped locomotives have operated nearly 300,000 miles.

The Security Circulators in service have proved so successful that an additional 142 Circulators are now on order.



View illustrating the positioning of Security Circulators in an average size of locomotive firebox prior to installing the brick arch.



Typical Security Circulator and brick Arch Installation in a locomotive firebox. The small sectional brick are as readily applied as in an ordinary arch tube firebox.

ARCH COMPANY, INC.

Security Circulator Division

the Inland Steel Company. Inquiry for this equipment was reported in the *Railway Age* of September 30.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered 2,400 tons of rails from the Tennessee Coal, Iron & Railroad Co.

THE UNION PACIFIC has ordered 36,000 tons of rails from the Colorado Fuel & Iron Company.

THE WABASH has been authorized by the federal district court to purchase 10,000 tons of 112-lb. rails and necessary fastenings, at a cost of \$1,337,000.

THE NORTHERN PACIFIC has ordered 35,600 tons of rails, placing 600 with the Colorado Fuel and Iron Company, 2,000 with the Inland Steel Company, 23,000 with the Carnegie-Illinois Steel Corporation and 10,000 with the Bethlehem Steel Company.

MACHINERY AND TOOLS

THE DELAWARE, LACKAWANNA & WESTERN is in the market for 176 miscellaneous shop tools and equipment including approximately 12 large machine tools, which will be installed in its locomotive shops and its car shops.

Construction

CHESAPEAKE & OHIO.—Contracts have been awarded to the John S. Metcalf Company, Chicago, for the construction of new elevators which will have a total capacity of approximately 2,500,000 bushels, to replace the elevators of this company in South Chicago, Ill., which were destroyed by fire last May. These elevators will consist of 36 reinforced concrete storage tanks, 24 ft. in diameter and 112 ft. high. Other work will consist of the construction of a reinforced concrete work house 35 ft. by 79 ft. by 195 ft. high, a car dumper, a marine tower, together with the installation of all necessary machinery and conveyors, and the construction of a new office building. The estimated cost of these facilities is \$615,000. In addition to this work, a contract amounting to approximately \$16,000 was awarded John D. Bolton, Chicago, for the repair and waterproofing of 27 reinforced concrete tanks, 24 ft. in diameter and 110 ft. high, which were damaged by the fire. The cupolas, housing, conveyors and machinery on top of these tanks will also be replaced on account of the fire, and the brick dryer house, used in connection with the old elevators, will be relocated, repaired and placed in operation as a part of the new facilities now under construction. Tracks serving the old elevators will be repaired and rearranged and the dock wall along the south side of the property will be repaired by Harry A. Thompson, Chicago. The slip will be cleaned of debris and dredged to restore it to the former 21 ft. depth of water. The total cost of all improvements will approximate \$741,000. The new plant will be leased to Rosenbaum Bros., Chicago, which firm also operated the elevators which were destroyed by fire.

Financial

AKRON & BARBERTON BELT.—*Abandonment*.—This company would not be permitted to abandon the operation of a part of its line called the Fairlawn extension between a point about 1,000 ft. north of Copley Road and the connection of the extension with the line of the Akron, Canton & Youngstown at Fairlawn Junction, Ohio, 1.7 miles, if Division 4 of the Interstate Commerce Commission adopts a proposed report of its Examiner Ralph R. Molster. The examiner found that the line's operation was advantageous to the Akron, Canton & Youngstown, which opposed the abandonment, and that the advantages should not be lost at this time.

ATCHISON, TOPEKA & SANTA FE.—*Equipment Trust Certificates*.—This road has applied to the Interstate Commerce Commission for authority to issue \$8,000,000 of 10-year 2½ per cent equipment trust certificates to finance 80 per cent of the purchase price of freight cars estimated to cost \$10,143,348. The certificates, to be sold under competitive bidding, will mature \$800,000 annually from November 1, 1940, to November 1, 1949.

ATCHISON, TOPEKA & SANTA FE—WESTERN PACIFIC.—*Stock of the Alameda Belt*.—Division 4 of the Interstate Commerce Commission has modified its order of May 31, 1928, so as to limit the amount of common stock that may be issued thereunder by the Alameda Belt to \$442,200, consisting of 4,422 shares of a par value of \$100 each. The original order had authorized the issuance of \$500,000 of common stock with 1,130 shares to be delivered to the Atchison, Topeka & Santa Fe and a like amount to the Western Pacific in repayment of advances, and the remaining 2,740 shares to be sold at par and the proceeds used for certain construction.

BOSTON & MAINE.—*Abandonment*.—This company would be authorized to abandon a portion of its Central Massachusetts branch extending from Oakdale, Mass., to Wheelwright, 25 miles, and to abandon operation over the line of the Boston & Albany between Barre Junction, Mass., and Creamery Road, 6 miles, if Division 4 of the Interstate Commerce Commission adopts a proposed report of its Examiner Lucian Jordan.

BALTIMORE & OHIO.—*Voluntary Adjustment Plan*.—The U. S. District court of Maryland has approved the plan of this company for modification of its interest charges and maturities, which has been promulgated under the provisions of the Chandler Act. The opinion, which was handed down by Judges W. C. Chestnut, J. J. Parker and A. M. Dobie, contained some 15,000 words but its "drift" is summed up in the following extract:

"We find and conclude from consideration of the plan and the testimony in support thereof that it is fair and equitable and indeed highly desirable and advantageous for all the creditors as well as in the public interest and that it is feasible in that it has a reasonable prospect of be-

ing successfully carried out so that in the long run the creditors will have the best chance to ultimately avoid substantial loss on their investments, and the railroad will be enabled to continue its service to the public as an interstate commerce carrier."

Speaking of the \$600,000 of expenses incurred in effecting the plan, the court pointed out that the amount is about ¼ of 1 per cent of the \$185,000,000 principal amount of securities whose maturity is extended under the plan.

Objection had also been raised to the particular provisions of the plan whereby dividends might be paid on common stock during the eight-year period of effectiveness. The court was of the opinion that such a possibility would not justify withholding approval of the plan as it now stands. "The bare possibility of any dividend payment in the next eight year period seems quite remote."

The plan, which was summarized in the *Railway Age* of September 10, 1938, briefly extends maturity dates of securities aggregating about \$185,000,000 and reduces annual fixed charges for a period of eight years from \$31,421,742 to \$19,644,679, making \$11,376,435 of present interest contingent and payable only if earned.

CHESAPEAKE & OHIO.—*Abandonment*.—This company has been authorized by Division 4 of the Interstate Commerce Commission to abandon a portion of its so-called Peach Orchard subdivision extending from a point 2,700 ft. east of the connection with the main line at Richardson, Ky., to the end of the line at Peach Orchard, 2.7 miles.

CHESAPEAKE & OHIO.—*Abandonment*.—This company has asked the Interstate Commerce Commission for authority to abandon the operation of a portion of its main line extending from Station 0 plus 59 to Station 35 plus 07 at the point of connection with tracks of the United States Government, 3,448 ft., all on the United States Military Reservation at Fort Monroe, in Elizabeth City County, Va.

CHICAGO & NORTH WESTERN.—*Abandonment*.—This company has been authorized by Division 4 of the Interstate Commerce Commission to abandon that portion of a branch line extending from Blackwell, Wis., to its easterly terminus, five miles. At the same time Division 4 has dismissed that part of the application requesting permission to abandon the remainder of the line extending easterly from Blackwell Junction, Wis., to Blackwell, 3.3 miles.

CHICAGO, BURLINGTON & QUINCY.—*Abandonment*.—This company has asked the Interstate Commerce Commission for authority to abandon a line extending from Kasbeer, Ill., to Walnut, 6.2 miles.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Reorganization*.—A protective committee representing the preferred stockholders of this company have asked the Interstate Commerce Commission to reopen its reorganization case for the introduction of new testimony. The petition points out that in the light of increased earnings during the past few months, new evidence can be introduced which should

Continued on next left-hand page

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have a bearing on the allocation of new securities under any plan approved by the commission.

CHICAGO, ROCK ISLAND & PACIFIC.—Acquisition and Operation.—This company has been authorized by Division 4 of the Interstate Commerce Commission to acquire and operate on an experimental basis for a period of three years a part of the Gulf, Texas & Western's line extending from Jacksboro, Tex., northwesterly to the end of the line at Seymour, 75.3 miles. The company has agreed to operate the line for a three-year period and to purchase it at the end of that time if the venture proves successful. The action was taken at the request of the communities served by the line, and they have agreed not to oppose the application for abandonment at the end of three years if the proposed operation is not financially feasible.

ERIE.—R. F. C. Loans.—This company has asked the Interstate Commerce Commission for its approval and has requested the Reconstruction Finance Corporation to purchase \$3,000,000 of equipment trust certificates at par, the certificates to mature serially in semi-annual equal payments over a period of 10 years and to bear interest at the rate of 2½ per cent. The funds will be used in part payment of the purchase of 700 box cars, 250 gondola cars, 500 hopper cars and 50 flat cars with the company paying at least 20 per cent of the purchase price in cash.

At the same time the company filed an amended application asking the commission to approve and the R. F. C. to loan it \$7,000,000, the proceeds to be used in part payment for the purchase of \$3,259,200 par value of capital stock of the Cleveland & Mahoning Valley, as of July 1, 1939, at a price of \$7,900,000. The application states that it is contemplated that with the reorganization of the Erie, the loan would be repaid from "new money" provided for the purposes of the reorganization unless the obligations evidencing the loan are exchanged for collateral notes with the same security as for the other obligations issued in connection with the reorganization. The company had previously asked the R. F. C. to loan it \$7,500,000 for the same purpose.

At the same time the Erie has asked the commission to authorize it to assume liability for the issuance of \$7,000,000 of four per cent collateral trust certificates to be used as collateral for the R. F. C. loan. The certificates will be payable in the amount of \$100,000 on April 1, 1940; \$100,000 on October 1, 1940; \$100,000 on April 1 and October 1 in each of the years thereafter to and including October 1, 1948; and \$100,000 on April 1, 1949. The remaining \$5,100,000 would become due and payable on October 1, 1949.

Accompanying this last application was an application for authority of the Erie to acquire control of the Cleveland & Mahoning Valley by purchase of the capital stock.

FLORIDA EAST COAST.—Equipment Trust Certificates.—Receivers for this road have applied to the Interstate Commerce Commission for approval of a plan whereby the Reconstruction Finance Corporation would purchase at par \$1,240,000 of 10-year three per cent equipment trust certificates

to finance 90 per cent of the purchase price of two streamlined coach trains to cost \$1,370,000. The certificates would mature in semi-annual installments of \$62,000 each on May 1 and November 1 of each year from 1940 to 1949. Each train would consist of a Diesel-electric locomotive and seven cars—one would be assigned to daily round-trip service between Jacksonville, Fla., and Miami, and the other to Miami-New York through service operated in conjunction with the F. E. C.'s northern connections which would furnish two additional similar trains.

FORDYCE & PRINCETON.—Abandonment.—This company has been authorized by Division 4 of the Interstate Commerce Commission to abandon (1) the portion of a line extending from Cynthia, Ark., to its terminus at station 385 x 00, approximately 1.1 miles, and (2) the portion of a line extending from station 158 x 40 to its terminus at Midway, Ark., approximately two miles.

ILLINOIS CENTRAL.—Operation by the Yazoo & Mississippi Valley.—The Yazoo & Mississippi Valley has asked the Interstate Commerce Commission for authority to (1) operate over a portion of the line of the Natchez & Southern in Natchez, Miss., 0.18 mile, and (2) operation over a line of the Mississippi Central between a connection of that carrier with the Natchez & Southern in Natchez, Miss., and a point on the wye track connection between the main line of the Mississippi Central and the main line of the applicant near Roxie, Miss., 23.3 miles.

LAKE ERIE, FRANKLIN & CLARION.—Abandonment.—This company has been authorized by Division 4 of the Interstate Commerce Commission to abandon its Harvey branch, extending from Elss Junction, Pa., to Harvey, 0.83 mile.

LINVILLE RIVER.—Abandonment.—This company has asked the Interstate Commerce Commission for authority to abandon and take up a spur track extending from Montezuma, N. C., to Pineola, 2.6 miles.

LITTLE RIVER.—Abandonment.—This company has asked the Interstate Commerce Commission for authority to abandon a line extending from Walland, Tenn., to Forks, 11 miles.

LOUISVILLE & NASHVILLE.—Abandonment.—This company has asked the Interstate Commerce Commission for authority to abandon the operation of a portion of its Swan Creek branch extending from Swan Creek Junction, Tenn., to Gordonsburg, 15 miles.

LOUISVILLE & NASHVILLE.—Abandonment.—This company would be permitted to abandon a portion of a branch line extending from Clay, Ky., to Morganfield, 18 miles, if Division 4 of the Interstate Commerce Commission adopts a recommended report of its Examiner J. S. Prichard.

MINNEAPOLIS & ST. LOUIS.—Abandonment.—This company would be permitted to abandon the line and the Minnesota

Northwestern Electric would be permitted to abandon the operation of a line extending from Thief River Falls, Minn., in an easterly direction to Goodrich, 18.7 miles, if Division 4 of the Interstate Commerce Commission adopts a proposed report of its Examiner R. Romero.

NORTHERN PACIFIC.—Abandonment by the Gilmore & Pittsburgh.—The Gilmore & Pittsburgh would be authorized to abandon its entire line extending from Armstead, Mont., to Salmon, Idaho, 100 miles, with a branch line from Leadore, Idaho, to Gilmore, 18 miles, a total of 118 miles, if Division 4 of the Interstate Commerce Commission adopts a proposed report of its Examiner Jerome K. Lyle. The company, all of whose capital stock is owned by the Northern Pacific, operates a line which connects with the Union Pacific at Armstead, Mont.

Due to the gradual falling off of revenue, the company asked authority to abandon the line. The Public Utilities Commission, Lemhi County, Idaho, and the city of Salmon, Idaho, filed intervening petitions asking that the abandonment be denied. They contended that the line could successfully operate if it received proper divisions from the traffic that it interchanged with the Union Pacific. Protestants contended that on freight originating and terminating on the applicant's line the real beneficiary is the Union Pacific because of the fact that it receives approximately two-thirds of all the revenues.

A witness for the Union Pacific testified that the present divisions allowed the applicant are in excess of those to which it is entitled, and that his company would prefer to forego the business entirely rather than accord greater divisions.

Protestants also contended that because of the fact that the company is controlled by the Northern Pacific, it should be considered as a part of it and that that company should be required to bear the operating loss, despite the fact that it has not been operated as a part of the Northern Pacific system. The examiner dismisses both of these contentions and finds that although the territory needs railroad service, the presence of several trucking and bus companies will not leave it without transportation.

VIRGINIAN.—Stock Split-up.—Stockholders of this road will vote at a special meeting in Norfolk, Va., November 9, on a proposal passed upon by the board of directors for a 4-to-1 split of both common and preferred stock issues of the road. Notice has been filed with the New York Stock Exchange that stock of record October 21 will be entitled to vote at the meeting. The 279,550 shares of six per cent cumulative preferred and 312,715 shares of common stock outstanding, both having a par value of \$100, would be split four ways into shares having a par value of \$25. Voting rights would be retained as at present.

Average Prices of Stocks and Bonds

	Oct. 10	Last week	Last year
Average price of 20 representative railway stocks..	34.53	35.09	30.77
Average price of 20 representative railway bonds..	60.30	59.96	60.28

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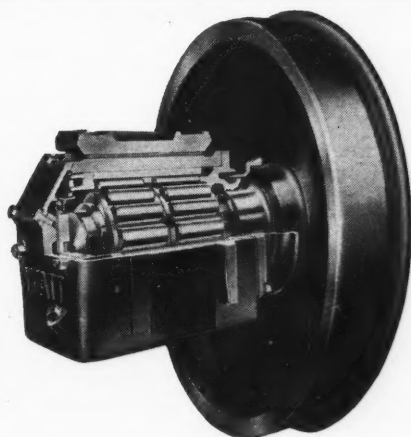
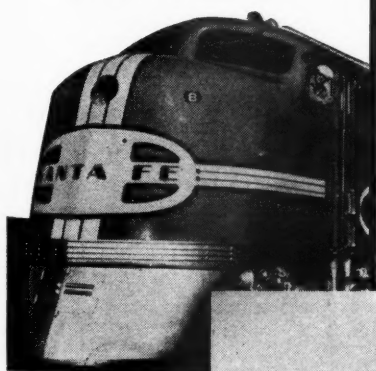
ULTRA-MODERN HYATT EQUIPPED



Top: The "Flying Yankee" on the Maine Central—Boston & Maine, nearing its million mile mark.

Other installations on the New York Central, Atlantic Coast Line, Florida East Coast and Kansas City Southern.

Below: The Sante Fe's "Golden Gate" with Hyatts on baggage and mail cars.



Hyatt pioneered the application of anti-friction bearings to railroad equipment and made important contributions to the development of the modern streamliners, many of which are now completely or partially Hyatt equipped. Write for new Hyatt Railroad Bearing Data Book. Hyatt Bearings Division, General Motors Sales Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS



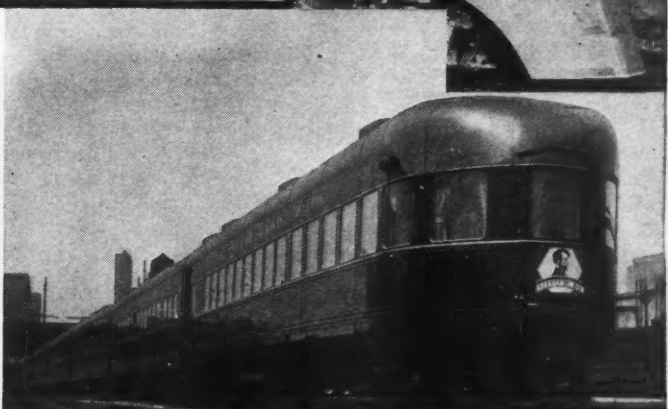
Top: Hyatt equipped diesel electric locomotive on the Seaboard.

Other installations on the Rock Island, Missouri Pacific and Baltimore & Ohio.

Below: Burlington's "General Pershing" with Hyatt equipped power truck.



One of the Hyatt equipped coaches on the Union Pacific's "Challenger."



The Alton's "Abraham Lincoln" with more than 500,000 miles of service to date.

Railway Officers

EXECUTIVE

C. J. Warren has been elected vice-president of the Apache Railway, with headquarters at McNary, Ariz., succeeding **P. E. Freydis**.

C. F. Kelley, president of the Butte, Anaconda & Pacific, with headquarters at New York, has been appointed also general counsel succeeding **D. M. Kelly**, who has been elected second vice-president and general western counsel, with headquarters as before at Butte, Mont.

Werter S. Hackworth, whose promotion to assistant to the president of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., was announced in the *Railway Age* of September 30, was born at South Pittsburgh, Tenn., on July 14, 1896, and graduated in civil engineering from the Alabama Polytechnic Institute on June 16, 1916. One month later he entered railway service as a track laborer on the N. C. & St. L. and on September 15, 1916, he was appointed instrumentman on the Chattanooga division. Mr. Hackworth was promoted to assistant division engineer of the Huntsville division on February 1, 1917, and on May 28, 1917, he enlisted in the U. S. Army, serving in France with the 17th Engineers. After his discharge from the army, he served from June, 1919, until October, 1920, as city engineer of South Pittsburgh, returning to the N. C. & St. L. on the latter date as a rodman on the Atlanta division. In June, 1921, he went with the Louisville & Nashville as a draftsman on a locating party and returned to the N. C. & St. L. in January, 1922, as an assistant engineer in the chief engineer's office at Nashville. In January, 1926, Mr. Hackworth was appointed assistant division engineer of the Atlanta division, but left the N. C. & St. L. again on December 31, 1931, serving as a coal salesman for the Whitwell Coal Corporation in Atlanta, Ga., until January 1, 1933, when he became superintendent of dairies for the State of Georgia. On September 1, 1933, he returned to the N. C. & St. L., as assistant engineer in the real estate department and was later appointed assistant real estate agent, the position he held until his recent promotion.

FINANCIAL, LEGAL AND ACCOUNTING

E. G. Hanson has been appointed auditor of revenues of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., succeeding **J. T. Mersen**.

Effective October 16, **William J. Collins**, cashier and paymaster of the Chicago & Western Indiana and the Belt Railway Company of Chicago, with headquarters at Chicago, has been elected treasurer of both roads, and **William H. Hudson**, auditor, with headquarters at Chi-

cago, has been elected also secretary of both roads. These men succeed to the duties of **M. F. Stokes**, whose election as president was announced in the *Railway Age* of September 16.

H. Bance has been elected secretary and treasurer of the Raritan River, with headquarters at Jersey City, N. J., succeeding **Charles H. Sisson**, who has been retired after 47 years of service.

J. A. Quinn, assistant to general auditor of the Southern Pacific, has been appointed auditor of disbursements, with headquarters as before at San Francisco, Cal., succeeding **C. B. Friend**.

Frank W. Franek, chief clerk to the auditor of passenger accounts of the Union Pacific, has been promoted to auditor of passenger accounts, with headquarters as before at Omaha, Neb., succeeding **T. H. Ochiltree**, whose retirement on October 1, was announced in the *Railway Age* of October 7.

Theodore R. Schneider has been appointed assistant general attorney of the St. Louis Southwestern, with headquarters at St. Louis, Mo., succeeding **John W. Murphy**, whose promotion to assistant general solicitor, with the same headquarters, was announced in the *Railway Age* of September 9.

A. S. Mitchell has been appointed auditor of passenger accounts of the Canadian National, with headquarters at



A. S. Mitchell

Montreal, Que., succeeding **W. H. Estano**, whose retirement was announced in the *Railway Age* of October 7. Mr. Mitchell was born in Scotland and commenced his railway career with the London Midland & Scottish. He has served in the passenger accounting department of the Grand Trunk and its successor, the Canadian National, since 1906.

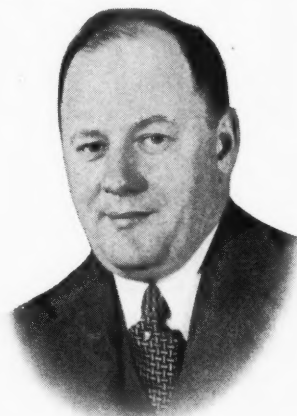
OPERATING

R. E. Kemper, assistant division superintendent on the Louisville & Nashville, with headquarters at Paris, Tenn., has retired after 52 years of service.

E. P. Olson has been appointed superintendent of the Central division of the St. Louis-San Francisco, with headquar-

ters at Ft. Smith, Ark., succeeding **J. S. McMillan**, who has resigned.

J. F. Connolly, whose appointment as superintendent of the Montreal terminals of the Canadian National at Montreal, Que., was announced in the *Railway Age* of September 30, was born at Levis, Que.,



J. F. Connolly

on July 9, 1896. Mr. Connolly was educated at Levis College and joined the Grand Trunk at Levis in 1914 as a clerk. In 1918 he was transferred to Montreal and in 1926 was appointed yardmaster at the Point St. Charles yards. In 1935 Mr. Connolly was promoted to general yardmaster in charge of the East end terminals, with headquarters at Longue Pointe and in January, 1939, was promoted to assistant superintendent of the Montreal terminals, the position he held until his recent appointment.

T. Filskov, superintendent and chief engineer of the Raritan River, with headquarters at South Amboy, N. J., has been retired after 41 years of service. **H. Filskov**, assistant superintendent, has been appointed manager in charge of operation and maintenance, with headquarters as before at South Amboy.

W. R. Adkinson has been appointed acting trainmaster on the Missouri Pacific at Nevada, Mo., succeeding **F. E. Bromley**, who has been transferred to Jefferson City, Mo. Mr. Bromley replaces **S. F. Ayler**, who has been appointed assistant superintendent of the Alexandria Terminal, Alexandria, La., relieving **J. S. Walker**, who has been temporarily assigned to other duties.

ENGINEERING AND SIGNALING

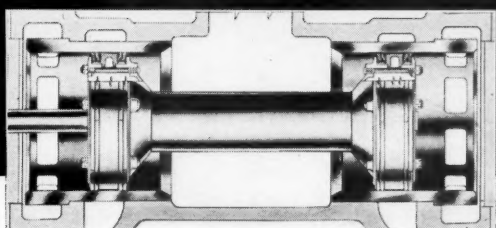
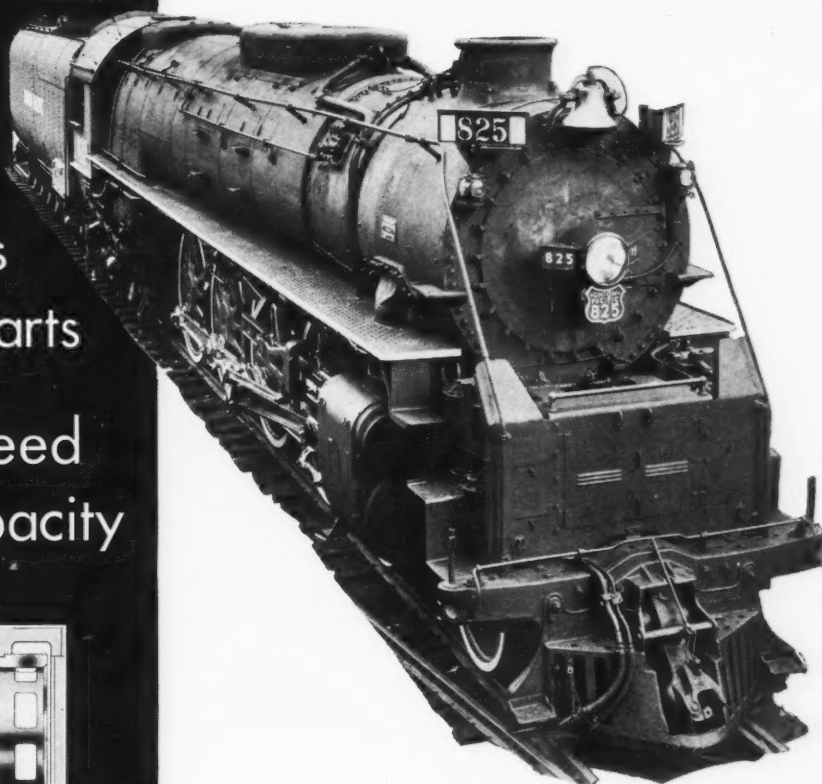
H. F. Whitmore, assistant district engineer of the Lake Erie and Western district of the New York, Chicago & St. Louis (Nickel Plate) with headquarters at Frankfort, Ind., has been promoted to division engineer of the Clover Leaf district with the same headquarters, succeeding **H. M. Hockman**, deceased.

Peter Aagaard, whose retirement on October 1, as superintendent of buildings of the Illinois Central, with headquarters at Chicago, was announced in the *Railway Age* of October 7, was born at Aalborg,

HSGI

Light Weight Valves
and Wear-resisting Parts

Increase High Speed
Power Earning Capacity



NATURALLY, high speeds mean increased frictional wear and greater shocks and stresses. Therefore, factors which effect economies in high speed locomotive operation are bound to produce similar savings in other classes of service.

HSGI Light Weight Valves reduce shocks and wear to a minimum. Big savings are effected in the maintenance of valve chamber parts and valve gear components.

Locomotive efficiency is also improved due to the fact that HSGI Light Weight Valves act more promptly and positively during cut-off adjustments. The economies effected by all HSGI Parts insure higher earnings from every locomotive equipped.

HSGI

Reg. U.S. Trade Mark

Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Finished Parts

Dunbar Sectional Type Packing
Duplex Sectional Type Packing
for Cylinders and Valves
(Duplex Springs for Above)
Sectional Snap Rings
Cylinder Snap Rings
Valve Rings All Shapes
Light Weight Valves
Cylinder Liners and Pistons
for Diesel Service

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HUNT-SPILLER GUN IRON

Air Furnace

Denmark on September 9, 1869, and received his higher education at a technical school in Aalborg. He entered railway service in 1896 as a carpenter on the Illinois Central, and three years later he was promoted to general foreman of bridges and buildings of the Chicago Terminal. Mr. Aagaard was advanced to supervisor of bridges and buildings of the Chicago division in 1907 and to general inspector of buildings for the system, with headquarters at Chicago, in 1913. He was appointed superintendent of buildings in 1928, and held that position until his retirement.

R. L. Schmid, whose appointment as principal assistant engineer of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., was announced in the *Railway Age* of September 23, was born at Louisville, Ky., on March 20, 1886, and attended the college of engineering of Kentucky State University from 1907 to 1910. He entered railway service in February, 1906, when he was employed as a rodman on the Louisville & Nashville. He served in the engineering department of the Penn Tunnel and Terminal Railroad in 1909, returning to the engineering department of the L. & N. in 1910. He entered the service of the Nashville, Chattanooga & St. Louis in 1915, as a pilot on valuation work, and was promoted to resident engineer on construction in 1916. Mr. Schmid was promoted to assistant engineer, with special assignments, in 1918, and to assistant division engineer of the Chattanooga division in 1919. He was advanced to division engineer of the Atlanta division in 1920, and in January, 1926, he was promoted to assistant to the general manager with headquarters at Nashville, holding that position until his recent appointment.

Harry Bell Reinsagen, whose retirement on October 1, as assistant chief engineer on the New York Central, with headquarters at Cleveland, Ohio, was announced in the *Railway Age* of October 7, was born at Cincinnati, Ohio, on September 17, 1872, and entered railway service on January 1, 1897, as an assistant engineer on the Lake Erie & Western (now part of the Nickel Plate). On January 1, 1906, he went with the Lake Shore & Michigan Southern (now part of the New York Central) as an assistant engineer and on January 1, 1910, he was promoted to first assistant engineer, with headquarters at Cleveland. Mr. Reinsagen was advanced to principal assistant engineer on September 1, 1912, and retained that position when the L. S. & M. S. was merged with the New York Central. On March 1, 1917, he was appointed engineer of maintenance of way, Lines West of Buffalo, with headquarters as before at Cleveland, and on March 16, 1921, he was re-appointed principal assistant engineer at Cleveland. Mr. Reinsagen was promoted to assistant chief engineer on July 1, 1929, and continued in that position until his retirement.

Frank W. Thompson, whose promotion to engineer officer of the Chicago, Rock Island & Pacific, with headquarters at Chicago, was announced in the *Railway*

Age of October 7, was born at Silver Cliff, Colo., on January 26, 1881, and attended the University of Kansas for five



Frank W. Thompson

years. He entered railway service on July 1, 1899, as a levelman on the Rock Island at Kansas City, Mo., returning to school that fall. On August 2, 1901, he returned to the Rock Island as a rodman at Kansas City and served in that capacity for six weeks. On July 6, 1903, he was appointed draftsman and estimator at Kansas City. During the next few years he served as draftsman, instrumentman and transitman at various points on the Rock Island, and on October 30, 1907, he was transferred to Chicago on office work and drafting. Mr. Thompson was promoted to assistant office engineer on August 2, 1908, and on December 17, 1909, he was appointed assistant engineer at Davenport, Iowa. On February 1, 1911, he was advanced to division engineer, with headquarters at Des Moines, Iowa, and on January 1, 1929, he was transferred to Rock Island, Ill., where he was located at the time of his recent promotion.

TRAFFIC

Henry C. Vincent, whose promotion to general passenger agent on the Atchison, Topeka & Santa Fe, with headquar-

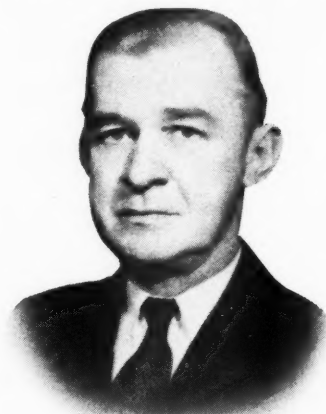


Henry C. Vincent

ters at Topeka, Kan., was announced in the *Railway Age* of September 23, was born at Stockton, Cal., on November 3,

1892, and entered railway service in November, 1911, as a telegraph operator on the Arizona division of the Santa Fe. In 1912, he was transferred to Merced, Cal., and in 1915, he was appointed a ticket clerk in the passenger department at Pasadena, Cal., later being transferred to San Francisco, Cal., and San Jose. Mr. Vincent was promoted to city freight agent at San Francisco in January, 1921, and to traveling freight and passenger agent at Seattle, Wash., three years later. In August, 1930, he was advanced to general agent at Portland, Ore., and in November, 1932, he was appointed division freight and passenger agent at Stockton, Cal. Mr. Vincent was promoted to assistant general passenger agent, with headquarters at Los Angeles, Cal., in August, 1936, and held that position until his recent promotion, which was effective on October 1.

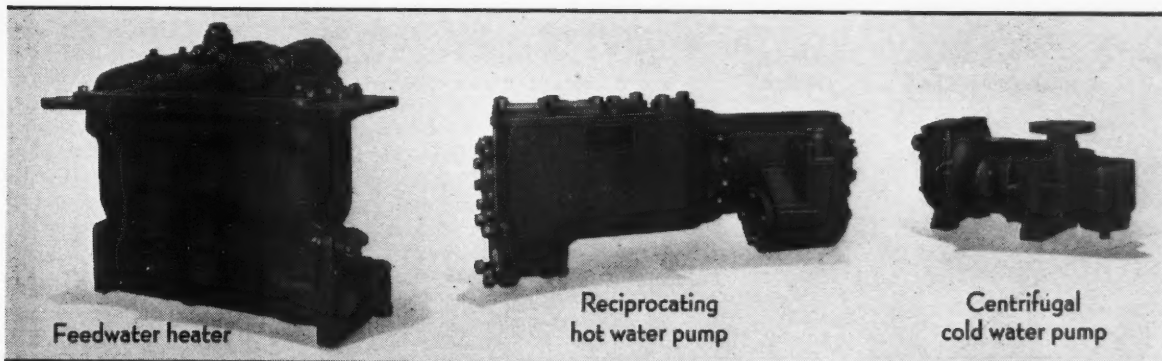
Frank A. Burke, whose promotion to general freight agent on the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., was announced in the *Railway Age* of September 30, was



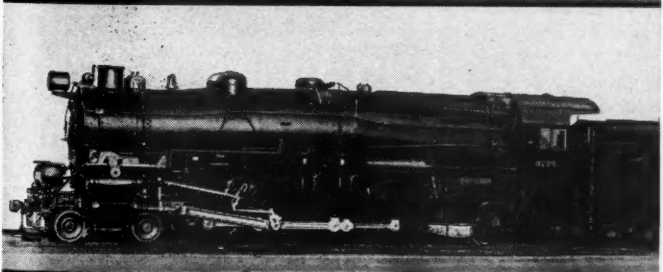
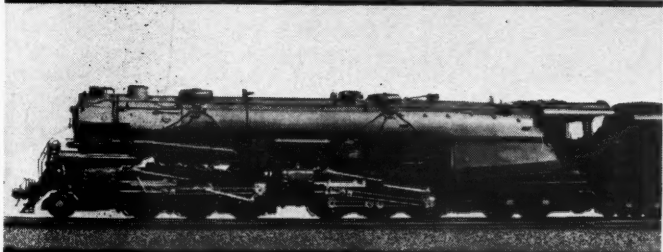
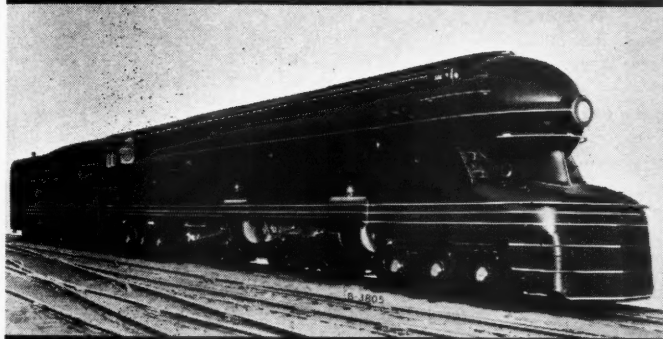
Frank A. Burke

born at Nashville, Tenn., and entered railway service on August 10, 1903 in the traffic department of the N. C. & St. L. Mr. Burke advanced through various positions in the traffic department, and on March 16, 1922 he was promoted to commerce agent. On March 1, 1936, he was promoted to assistant general freight agent at Nashville and held that position until his recent promotion.

William H. Wharton, whose promotion to general freight agent on the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., was announced in the *Railway Age* of September 30, was born at Nashville on July 26, 1878, and entered railway service on December 1, 1898, as a stenographer on the N. C. & St. L. at Nashville. A year later he was transferred to the general agent's office at Chicago, and in February, 1902, he was appointed soliciting agent at that point. In June, 1904, he was promoted to traveling freight agent, and in January, 1907, to commercial agent at Chicago. During the World War, he served as a captain in the ordnance department of the U. S. Army at Washington, D. C., and in April, 1919, he returned to the N. C. & St. L., as a special



Worthington Open Type SA Locomotive
Feedwater Heating Equipment



All of the above locomotives, exhibited at the New York World's Fair 1939, are equipped with Worthington Open Type Locomotive Feedwater Heating Equipment

WORTHINGTON OPEN TYPE FEEDWATER HEATERS

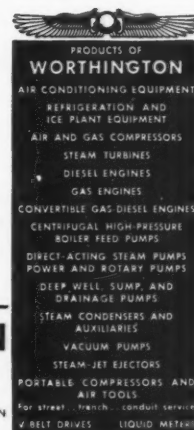
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for stoker applications
to existing power*

Efficient, economical, dependable . . . the annual returns are 40% to 60% . . . enough to pay for the needed stoker, or some other requirement.

- Perfect heat transfer
- Exhaust steam *only* . . . not live steam . . . mixes with the cold water from the tender
- No tubes to accumulate scale or soot
- Lowest maintenance of all feedwater heating equipment

Saves the *most* fuel and water
Greatest increase in boiler capacity
Speeds up train schedules
Reduces stops for water

Full details, and representative performance data, available on request.



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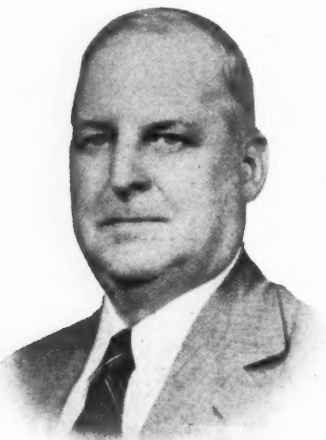
PITTSBURGH
ST. LOUIS
ST. PAUL
SAN FRANCISCO

SEATTLE
TULSA
WASHINGTON

LH9-2

October 14, 1939

service agent. Mr. Wharton was promoted to general northern agent, with headquar-



William H. Wharton

ters at Chicago, on January 1, 1920, and a year later he was advanced to assistant general freight agent, with headquarters at Nashville, the position he held until his recent promotion.

John Charles Kirk, whose promotion to freight traffic manager of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., was announced in the *Railway Age* of September 30, was born at Erie, Pa., on May 12, 1879, and entered railway service on the N. C. & St. L. in November, 1896, at Atlanta, Ga. On September 1, 1900, he was transferred to the general freight office at Nashville, Tenn., as rate clerk, and subsequently served as executive clerk, chief rate clerk, chief



John Charles Kirk

clerk, and assistant general freight agent in charge of rates, divisions and tariffs at that point. On July 1, 1928, he was promoted to first assistant general freight agent and on August 1, 1937 to general freight agent, the position he held until his appointment as freight traffic manager, which was effective October 1. From September, 1916, to May, 1918, Mr. Kirk served as a member and secretary of the Fourth Section Committee of Southern Carriers, with headquarters at Washing-

ton, D. C., and during the World War he was a member of the Advisory Committee of the Southern Freight Traffic Committee, Atlanta, Ga. From January, 1921 to November, 1922 he served as a member of the reorganized Fourth Section Committee, Southern Carriers, headquarters Atlanta, and subsequently as a member of the General Committee of Southern Freight Association. At present he is a member of the Executive Committee of the Southern Freight Association.

MECHANICAL

F. W. Schultz, shop superintendent on the Atchison, Topeka & Santa Fe at West Wichita, Kan., retired on October 5, and the position of shop superintendent at that point has been abolished.

S. P. Seifert, superintendent of the car department of the Norfolk & Western at Roanoke, whose retirement on October 1 was reported in the *Railway Age* of October 7, entered the service of the Norfolk & Western in 1891 as a car builder. Two years later, he was promoted to gang foreman in the car department and rose successively in that department as assistant foreman, supervisor, and superintendent. For 21 years of his almost half a century of service with the N. & W., he was superintendent of the car department.

OBITUARY

William C. Staley, who retired in January, 1928, as general agent, freight department, for the Missouri Pacific at Chicago, died at that point on October 6, at the age of 82.

Clifford B. Andrews, assistant general passenger agent of the Canadian Pacific, with headquarters at Toronto, Ont., died on October 7 of a heart attack, in his 47th year.

E. W. Boots, who retired in 1931 as engineer maintenance of way of the Pittsburgh & Lake Erie, died on September 16 at his home in Pittsburgh, Pa. Mr. Boots was born on June 7, 1870, and attended Geneva College. He entered railway service in 1889 as chainman with an engineering corps on the Pittsburgh & Lake Erie, and served consecutively as rodman, levelman and transitman until 1892 when he became assistant engineer. Mr. Boots was appointed engineer maintenance of way in April, 1918, the position he held until his retirement in 1931.

Edwin C. Blanchard, who retired as general manager of the Northern Pacific, lines west of Paradise, Mont., on August 1, 1924, died on October 6 in Tacoma, Wash. Mr. Blanchard was born at Wapello, Iowa on July 29, 1854, and entered railway service in 1873 as an agent and operator on the Burlington, Cedar Rapids & Northern (now part of the Chicago, Rock Island & Pacific). He subsequently served in a similar capacity on the Union Pacific and in 1883 he went with the Northern Pacific as a train dispatcher at Livingston, Mont. In 1885, Mr. Blanchard was promoted to chief dispatcher, and in

1897 he was advanced to division superintendent. He was further advanced to general superintendent of the Eastern district in 1909 and to assistant general manager of the lines west of Paradise in April, 1912. Mr. Blanchard was promoted to general manager of that territory in December, 1921, and held that position until his retirement.

George L. Griggs, general superintendent of the Eastern district of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill., died in a hospital in that city on October 8, following a long illness. Mr. Griggs was born in 1872 in Pawnee County, Neb., and prior to entering railway service, engaged in various occupations from 1890 to 1904. In the latter year he entered the service of the Burlington as a stenographer in the office of the general superintendent at Lincoln, Neb., and in 1905, he was promoted to chief clerk to the general superintendent at Alliance, Neb. In March, 1910, he was advanced to general yardmaster at Alliance and six months later was promoted to trainmaster at Sterling, Wyo., later being transferred to Omaha, Neb. Mr. Griggs was further advanced to superintendent in September, 1912. He held this position at various points, being located on the Galesburg and Beardstown divisions, with headquarters at Galesburg, when he was promoted to general superintendent at that point on May 1, 1936, the position he held at the time of his death.

John Vipond Davies, vice-president and chief engineer, Hudson & Manhattan, whose death was announced in the *Railway Age* of October 7, was born in Swansea, South Wales, in 1862 and was educated at Wesleyan College, Taunton, England, and the University of London. After engineering work in connection with ship and engine building and coal and iron concerns he came to the United States at the age of 27. In 1894 he entered into a partnership known as Jacobs & Davies, consulting engineers, becoming vice-president in 1909 and president in 1917. Between 1898 and 1900 he was chief engineer in charge of construction of the Kanawha & Pocahontas and the West Virginia Short Line (now B. & O.), and from 1901 to 1907 served as chief engineer for the Atlantic avenue improvement of the Long Island, Brooklyn, N. Y. In 1905 he was made chief engineer in charge of construction of the Hudson & Manhattan and later became chief engineer in charge of operation of the road. At this time his firm also made preliminary studies for the submarine tunnels of the Pennsylvania under the Hudson and East rivers at New York.

Following completion of the Hudson & Manhattan Mr. Davies also was connected with various major public construction projects, including utility improvements in New York; a prospective tunnel under the Volga river, Russia, for the Moscow-Kazan railroad (1915); and the New Orleans Public Belt railroad (1918-1919). He was a member of the New York State Bridge & Tunnel Commission and the New Jersey Interstate Bridge & Tunnel Commission's board of engineers.



Speed *Power*
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LOCOMOTIVES USED IN PASSENGER
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BALDWIN LOCOMOTIVE WORKS
Philadelphia

STEAM, INTERNAL COMBUSTION AND ELECTRIC LOCOMOTIVES
SPECIAL ENGINEERING PRODUCTS

Operating Revenues and Operating Expenses of Class I Steam Railways

Compiled from 135 Monthly Reports of Revenues and Expenses Representing 139 Class I Steam Railways

(Switching and Terminal Companies Not Included)

FOR THE MONTH OF AUGUST, 1939 AND 1938

Item	United States		Eastern District		Southern District		Western District	
	1939	1938	1939	1938	1939	1938	1939	1938
Miles of road operated at close of month	233,384	234,294	57,536	57,815	44,432	44,618	131,416	131,861
Revenues:								
Freight	\$276,707,103	\$253,577,791	\$109,550,413	\$93,275,957	\$55,051,428	\$49,214,534	\$112,105,262	\$111,087,300
Passenger	39,821,343	36,294,375	22,012,821	19,875,554	4,127,299	3,870,226	13,681,223	12,548,595
Mail	7,748,573	7,443,527	3,010,294	2,889,385	1,284,589	1,251,983	3,453,690	3,302,159
Express	4,178,230	3,921,745	1,835,488	1,484,740	517,721	750,532	1,825,021	1,686,473
All other operating revenues	15,944,313	14,097,980	7,469,513	6,683,977	1,724,944	1,616,949	6,749,856	5,797,054
Railway operating revenues	344,399,562	315,335,418	143,878,529	124,209,613	62,705,981	56,704,224	137,815,052	134,421,581
Expenses:								
Maintenance of way and structures	43,862,402	39,853,739	16,120,292	13,638,694	7,355,519	6,633,884	20,386,591	19,581,161
Maintenance of equipment	63,192,292	55,806,828	27,171,934	22,329,332	12,559,231	11,056,408	23,461,127	22,421,088
Traffic	8,918,828	8,331,086	3,251,607	3,020,479	1,656,296	1,567,472	4,010,925	3,743,135
Transportation—Rail line	117,552,956	111,784,639	52,119,783	48,060,202	19,142,877	18,132,639	46,290,296	45,591,798
Transportation—Water line	427,850	401,768	.....	.....	.....	.....	427,850	401,768
Miscellaneous operations ..	3,507,596	3,262,725	1,446,281	1,360,738	314,228	288,614	1,747,087	1,613,373
General	10,620,105	10,479,428	4,194,137	4,068,472	2,032,058	2,001,689	4,393,910	4,409,267
Transportation for investment—Cr.	460,402	347,261	68,041	61,596	38,083	64,948	334,278	220,717
Railway operating expenses	247,621,627	229,572,952	104,235,993	92,416,321	43,002,126	39,615,758	100,383,508	97,540,873
Net revenue from railway operations	96,777,935	85,762,466	39,642,536	31,793,292	19,703,855	17,088,466	37,431,544	36,880,708
Railway tax accruals	31,183,774	29,191,973	13,174,816	12,314,614	6,360,490	5,584,900	11,648,468	11,292,459
Railway operating income ..	65,594,161	56,570,493	26,467,720	19,478,678	13,343,365	11,503,566	25,783,076	25,588,249
Equipment rents—Dr. balance ..	7,993,851	8,195,573	3,823,943	3,406,214	†395,372	†190,772	4,565,280	4,980,131
Joint facility rent—Dr. balance ..	3,014,064	2,953,139	1,668,003	1,621,208	280,868	313,708	1,065,193	1,018,223
Net railway operating income ..	54,586,246	45,421,781	20,975,774	14,451,256	13,457,869	11,380,630	20,152,603	19,589,895
Ratio of expenses to revenues (per cent)	71.9	72.8	72.4	74.4	68.6	69.9	72.8	72.6
Depreciation included in operating expenses	16,873,947	16,919,589	7,425,900	7,408,112	3,324,918	3,289,135	6,123,129	6,222,342
Pay roll taxes	8,987,655	8,426,485	3,804,610	3,447,046	1,553,274	1,472,698	3,629,771	3,506,741
All other taxes	22,196,119	20,765,488	9,370,206	8,867,568	4,807,216	4,112,202	8,018,697	7,785,718

FOR EIGHT MONTHS ENDED WITH AUGUST, 1939 AND 1938

Miles of road operated at close of month*	233,557	234,627	57,591	57,940	44,482	44,695	131,484	131,992
Revenues:								
Freight	\$1,994,885,424	\$1,787,444,058	\$816,405,479	\$698,317,676	\$401,368,429	\$363,802,806	\$777,111,516	\$725,323,576
Passenger	279,299,020	271,556,581	154,227,278	147,927,003	36,806,023	37,137,480	88,265,719	86,492,098
Mail	63,442,453	61,485,539	24,346,986	23,492,894	10,961,953	10,723,370	28,133,514	27,269,275
Express	34,678,062	28,985,865	13,697,329	10,000,551	7,643,137	6,160,542	13,337,596	12,824,772
All other operating revenues ..	108,657,011	101,520,141	52,800,485	49,705,142	13,482,547	13,138,145	42,373,979	38,676,854
Railway operating revenues	2,480,961,970	2,250,992,184	1,061,477,557	929,443,266	470,262,089	430,962,343	949,222,324	890,586,575
Expenses:								
Maintenance of way and structures	306,362,408	272,393,815	113,935,770	97,985,240	54,529,352	50,947,757	137,897,286	123,460,818
Maintenance of equipment	490,458,261	440,481,927	210,591,213	180,710,434	94,771,559	85,825,883	185,095,489	173,945,610
Traffic	70,773,054	68,562,734	25,544,593	24,934,844	13,306,439	12,980,211	31,922,022	30,647,679
Transportation—Rail line	911,705,229	890,004,219	408,845,960	390,091,967	153,888,821	150,932,987	348,970,448	348,979,265
Transportation—Water line	3,225,418	3,173,778	.....	.....	.....	.....	3,225,418	3,173,778
Miscellaneous operations ..	25,010,035	25,120,876	10,638,225	11,073,958	3,170,651	3,122,245	11,201,159	10,924,673
General	85,418,774	85,676,831	33,966,868	33,955,619	16,222,896	16,317,606	35,229,010	35,403,606
Transportation for investment—Cr.	2,625,298	2,080,308	313,575	396,648	441,158	376,743	1,870,565	1,306,917
Railway operating expenses	1,890,327,881	1,783,333,872	803,209,054	738,355,414	335,448,560	319,749,946	751,670,267	725,228,512
Net revenue from railway operations	590,634,089	467,658,312	258,268,503	191,087,852	134,813,529	111,212,397	197,552,057	165,358,063
Railway tax accruals	233,178,259	226,096,314	99,586,674	95,965,322	47,184,363	44,213,682	86,407,222	85,917,310
Railway operating income	357,455,830	241,561,998	158,681,829	95,122,530	87,629,166	66,998,715	111,144,835	79,440,753
Equipment rents—Dr. balance ..	64,395,689	63,002,834	28,236,121	26,068,321	4,108,165	4,662,706	32,051,403	32,271,807
Joint facility rent—Dr. balance ..	23,710,785	23,520,618	12,862,527	12,548,775	2,623,139	2,662,477	8,225,119	8,309,366
Net railway operating income ..	269,349,356	155,038,546	117,583,181	56,505,434	80,897,862	59,673,532	70,868,313	38,859,580
Ratio of expenses to revenues (per cent)	76.2	79.2	75.7	79.4	71.3	74.2	79.2	81.4
Depreciation included in operating expenses	134,617,360	134,740,321	58,917,632	58,811,335	26,605,757	26,296,514	49,093,971	49,632,472
Pay roll taxes	68,412,020	65,177,604	29,172,137	27,253,084	12,061,383	11,663,138	27,178,500	26,261,382
All other taxes	164,766,239	160,918,710	70,414,537	68,712,238	35,122,980	32,550,544	59,228,722	59,655,928

* Represents an average of the mileage reported at the close of each month within the period.

†Decrease, deficit or other reverse item.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.